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LOWER COLORADO RIVER COOPERATIVE PLANNING AREA

SPECIAL ECONOMIC SUPPLEMENT

DECEMBER 1971

United States Department of the Interior
Bureau of Land Management
Arizona and California

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I. SUMMARY AND CONCLUSIONS

The Lower Colorado River Cooperative Planning Area includes lands along each side of the Colorado River from Davis Dam to the Mexican Border in Mohave and Yuma Counties, Arizona, and Imperial, Riverside and San Bernardino Counties, California. Economic data are available on a county basis; therefore this Special Supplement includes all of the named counties and the combined area is referred to as the "Five County Area." Although the data cover the entire county in each case, it is related to the LCR Cooperative Planning Area as much as possible.

POPULATION:

Almost 85 percent of the Five County Area population, which totals about 1.3 million people, live in the Riverside-San Bernardino-Ontario metropolitan area. The remainder of the area is sparsely populated with concentration of inhabitants in the Colorado River and Imperial Valleys. Concentrations of population have tended to center around agricultural and recreational activities. About 89,000 people, or 7 percent of the Five County Area population, live in the Colorado River Valley.

The population is projected to increase to about 1.8 million or about 42 percent by 1980, with most of the increase occurring in the Riverside-San Bernardino-Ontario metropolitan area. No projections are available for census tracts along the Colorado River; however, if past trends continue, California population will increase only slightly, if any, in the Blythe and Needles areas, while substantial growth will continue in the Yuma, Parker, Havasu City and Bullhead City areas of Arizona. Most of the population growth on the Arizona side has been at Havasu City which is a well promoted new city development.

These facts indicate that little or no lands will likely be needed around the California communities along the river for new growth and development. Substantial land acreage will probably be needed for community growth and development in Arizona. Part of this demand for additional land will most likely be made on public lands adjacent to these communities and especially around Havasu City.

Population growth along the river is not expected to significantly increase the demand for outdoor recreation. Increases in population of over 3 million within the Region, most of which is projected to occur in the Los Angeles area, will probably cause major increases in demands for both desert recreation and water oriented recreation along the river.

INCOME:

Total personal income for the Five County Area is almost $4 billion with over $3.5 billion generated in the Riverside-San Bernardino-Ontario metropolitan area. Per capita personal income is $3211 compared to $4078 for the Region. The per household disposable income of $7760 is also substantially below the Regional figure of $11,217 per household. These low figures appear to result from several factors which include (1) a high percentage of persons on transfer payments (pensions, welfare, unemployment, disability benefits, etc.), (2) large numbers of low income farm workers, and (3) large numbers of retirees. This is reinforced by the fact that only 61 percent of the total personal income is generated by wages and salaries compared to about 67 percent for the Region. Although poverty data are available only for individual counties within the Five County Area, it appears that about 18 to 20 percent of all families are below the $3000 per year income level, which is a reasonable approximation of the average family poverty level.

The most important sectors from the standpoint of earnings (personal income) produced are, in descending order of importance: Manufacturing, State and local government, wholesale and retail trade, services, Federal government and farms. Although the agriculture sector is sixth in total personal income produced, it produces a relatively low income for its wage and salary workers. Generally income production from activities on public lands is relatively low for either or both per capita and total personal income.

EMPLOYMENT:

Employment, as with population and income, is of course concentrated in the Riverside-San Bernardino-Ontario metropolitan area. Over 90 percent of the Five County Area's employment of almost 427,000 is within this metropolitan area. The major employment sectors, in descending order of importance are: Government, trade, services, and manufacturing. These are population center oriented sectors, while the resource based sectors such as livestock, mining and outdoor recreation are more oriented to rural areas. These resource sectors generally employ relatively few people per million dollars of output compared to the population center oriented sectors. Relatively large changes in resource production from public lands are therefore required before significant changes in employment are realized.

The Five County Area unemployment rate is about 6 percent. Because of the limited effect changes in public land resource production have on employment, it is unlikely that BLM programs can significantly improve the unemployment situation within the Five County Area. Recreation, which is included in the trade and services sectors, would probably provide more employment per million dollars of capital outlay than the other public land resource activities.

INDUSTRY ANALYSIS

Table 1 identifies and displays the basic natural resource economic data for the Five County Area as follows:

> The comsumption of basic natural resources.
>
> The supply of natural resources from public lands.
>
> The cash receipts from and/or expenditures for the natural resources.
>
> The total personal income generated by these natural resources.
>
> The economic dependence of users, industries and communities on these natural resources.
>
> The projected demands for natural resource products.

Following the table are summary analyses of the magnitude of resource production and demand and the contribution from public lands in meeting present and future demands.

TABLE 1. - SUMMARY

Present Resource Consumption

	Total	Public Land
Livestock Forage (AUM's)	1/	393,400
General Recreation Use (Rec Days)	21,287,400	7,881,600
Hunting (Hunter Days)	562,000	330,700
Mining	2/	2/

Monetary Measures Used in Computing Industry Dependence

	Total	Public Land
Livestock (Cash Receipts)	$405,810,000	$ 3,344,000
General Recreation (Total Local Expenditure)	37,253,000	13,793,000
Hunting (Total Local Expenditure)	1,258,000	707,000
Mining (Value of Product Sold)	239,424,000	40,605,000

Dependence of Livestock Users on Public Land Forage

	Number	% of Total
Total Users	218	100
Unknown	5	2
Dependent for 0-24%	75	35
Dependent for 25-49%	18	8
Dependent for 50-74%	24	11
Dependent for 75-100%	96	44

Dependence of Resource Based Industries on Public Lands

	Percent
Livestock	0.8
General Recreation	37.0
Hunting	56.2
Mining	16.9

Earnings (Personal Income) Attributable to Resource Products

	Total	Public Land
Livestock Forage	$253,572,000	$ 1,732,000
General Recreation	56,065,000	20,758,000
Hunting	1,893,000	1,065,000
Mining	57,755,000	8,607,000

TABLE 1 Contd. - SUMMARY

Dependence of Community on Resource Products[3]

Industry Sectors	Total	Public Land
Livestock	6.05	.04
General Recreation	1.34	.49
Hunting	.04	.03
Mining	1.40	.21
Total	8.83	.77

Projected Demand 1980[4]

	Public Land
Livestock Forage (AUM's)	550,800
General Recreation (Rec Days)	13,083,500
Hunting	Reserved[5]
Mining (Dollars)	47,711,000[5]

---

[1] Not available for all counties.

[2] Not available in common unit of measure because of the variety of minerals.

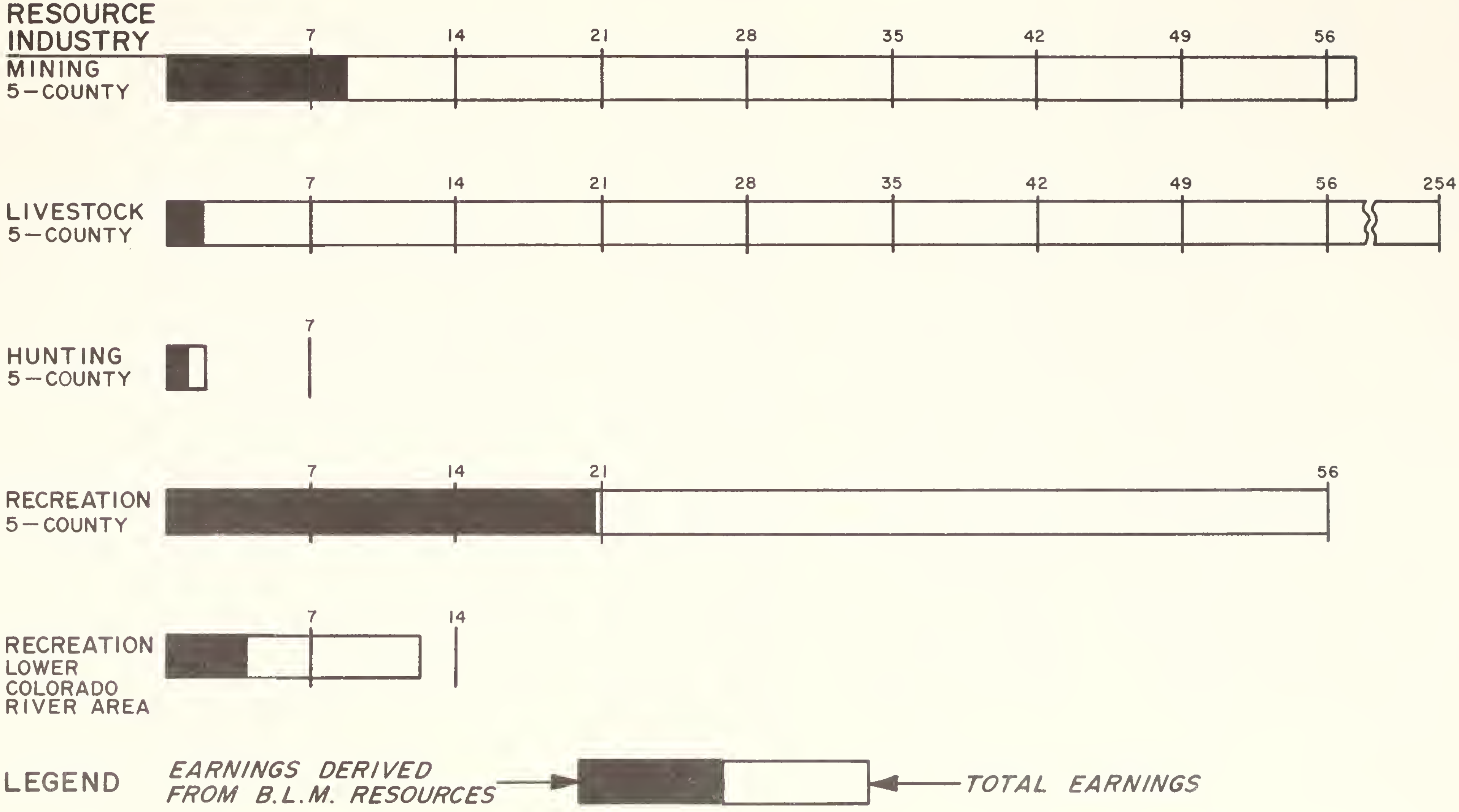
[3] Percent of total personal income.

[4] Benchmark showing the amount public land would have to produce in order to maintain its current share of the total. NOT A PRODUCTION REQUIREMENT. Supply from public land may or may not be able to meet the projected demand.

[5] See Narrative.

FIGURE I

EARNINGS ATTRIBUTABLE TO RESOURCE INDUSTRIES
FIVE COUNTY AREA
($ 000,000)



Livestock Forage

A total of 218 livestock operators depend on the public lands for livestock forage. Ninety-six, or 44 percent of the total, are 75 to 100 percent dependent; whereas 75, or 35 percent of the users, obtained less than 25 percent of their forage requirements from public grazing lands. Yuma and Mohave Counties (Arizona) have the greater number of operators (76) who fall in the 75- to 100-percent dependency class, as compared with 20 operators in California (Riverside-San Bernardino Counties).

Livestock industry and community dependence on public land forage is insignificant. Earnings, or total personal income for the livestock sector of the economy, accounted for approximately $254 million in 1970, of which $1,732,000 was attributable to public lands. Industry and community dependence are only .8 percent and .04 percent, respectively, on public land forage which again points out the relatively small contribution of the public lands to total cash receipts and total personal income. In contrast, the Five County Area is dependent on the entire livestock sector for slightly over 6 percent of its total personal income.

Despite low industry and community dependence on public land throughout the Five County Area, analysis of range livestock operations has shown one Animal Unit Month (AUM) of forage from public lands yields about $8.50 gross to the operator based on 1969 prices. This value, multiplied by total public land AUM's, accounts for over $3.3 million in gross cash receipts to the economy of the Five County Area. The net value of the AUM's, together with secondary benefits (income generated) is shown above as personal income attributable to public lands from livestock forage.

The livestock industry of Mohave County (Arizona) is 55.4 percent dependent upon forage from public lands. This is atypical for the total Five County Area, but points out the difference between a large number of cow-calf operations comprising the livestock industry in this county versus mostly feedlot operations in the other counties. Fifty-one percent of the agricultural industry in Mohave County is dependent on public land forage. The livestock industry is 2.3 percent dependent on public lands in Yuma County and only .6 percent in the San Bernardino-Riverside community impact area. Imperial County, California, is not at all dependent upon public lands. While industry and community dependence is variable by county, it must be remembered that livestock operators (initial users) depend on public land forage resources for at least part of their livelihood. Any change in supply, or the price of this forage, could adversely affect livestock operators in Yuma and Mohave Counties, but would have little impact on operators in the California portion of the Five County Area and little impact on the livestock industry or total personal income of the Five County Area.

Projection of livestock feed requirements requires consideration of the fact that the livestock industry is comprised of range livestock operations as well as feedlots. The effective demand of ranches for forage is expected to increase slightly. Range livestock numbers are only expected to increase 3.2 percent for the period 1970-80. Projected demand for all livestock feed in 1980 is expected to increase 40 percent in this decade, according to published data by the Office of Business Economics and Economic Research Service. The public lands now supply 393,400 AUM's of forage. The 1980 benchmark projection is 550,760 AUM's, or an increase of 157,360 AUM's of forage if the public land is to maintain its present share of production. This is far above the capability of the public land to produce because of a lack of lands suitable for range revegetation or rehabilitation. Improved range management may provide some increase in AUM's, but the resource is not capable of producing the projected increase in demand. The demand for a 40-percent increase is expected to be met by feedlot operations within the area; therefore in the future the public land will become less important to the entire livestock sector and the economy of the local communities.

Hunting

Initial users (hunters) of wildlife resources in the Five County Area are heavily dependent on public lands. Of the estimated 718,000 hunter days use in 1968, the public lands supplied about 404,000. These figures include all types of hunting--upland game, big game and waterfowl. Much of the hunter use is for upland game birds such as quail and doves, and for small game such as rabbits. A lesser number hunt deer and a few hunt desert bighorn sheep in Arizona. Nonconsumptive uses of wildlife are considered to be general recreation, and the values for this use are included in the General Recreation data.

The Five County Area is about 59 percent dependent on public lands for its total hunting use. This group of users is thus most dependent on public lands and are most affected by BLM land use decisions. At the same time, economic returns from wildlife user groups are less than from other user groups such as miners, livestock growers, etc.

Mohave and Yuma Counties derive a larger percentage of their total income from hunting than do the California counties. The overall values generated from hunting are, however, much greater in the California counties. Total personal income from hunting in the Five County Area amounted to about $1.9 million in 1968, compared to $1.1 million on public lands (Table 1).

Hunting on the public lands in the Lower Colorado River Cooperative Planning Area is a much smaller percent of the total hunting use than in the entire Five County Area. Most of the high value wildlife habitat--and therefore the hunting--in this area is on lands in other ownership or control.

Benchmark projections for both the Five County Area and Lower Colorado River Area are not available; however, information indicates that aside from upland game birds in the desert no major changes should be expected in hunting pressures or in animal populations.

The hunter pressure for upland game birds is expected to double on the California desert by 1980 but current bird populations are expected to be sufficient to withstand this pressure. Big game hunting and waterfowl hunting are very limited on public lands in both the Five County Area and the Lower Colorado River Cooperative Planning Area. This is not expected to change significantly through 1980.

In summary, the wildlife resource has a considerable value in the Five County Area because of the vast area involved and large number of hunters dependent on public lands. The production of game animals from these lands is low, however, and the ultimate value for wildlife resources may well be for nonconsumptive uses such as sightseeing, photography, nature study, etc., rather than for hunting.

Recreation

The Los Angeles metropolitan area exerts a heavy recreation use pressure on both the desert and water-oriented recreation use areas of the Five County Area. The heaviest impact is felt in Riverside and San Bernardino Counties which are adjacent to the Los Angeles metropolitan area. A lesser but major impact from this major population center is felt in Imperial, Mohave and Yuma Counties.

In 1969, more than 21 million recreation days were estimated for the Five County Area. About 37 percent of this use occurred on public lands. Almost 4.7 million visitor days of this total were spent on lands immediately adjacent to the Lower Colorado River (USC Study 1967-68) with over 30 percent of this use occurring on public lands administered by BLM along the river. Recreation users are more heavily dependent upon public lands in the Imperial, San Bernardino and Yuma Counties than in the Five County Area as a whole.

Recreation use is highly significant to the economy of the Five County Area in that it produces over 1.3 percent of the total personal income. Recreation use on public lands produces almost .5 percent of the total personal income generated within the Five County Area.

Since most of the recreation use within the Five County Area is made by users from outside the area, one of the major economic impacts is the transfer of income from the Los Angeles urban area to rural sections of the Five County Area. Local expenditure per visitor day is about $1.75. When re-spent by local residents, each $1.00 expended for outdoor recreation generates about $1.50 in personal income to the local economy.

The .5 percent dependence on public land recreation for total personal income appears at first glance to be relatively low. This is true only when compared with the high personal income generating sources in the urban industrial complex in western Riverside and San Bernardino Counties. In the smaller towns and rural areas of the Five County Area there can be no doubt that outdoor recreation generates a much more significant part of the total personal income. Based on individual county information, it appears that recreation may produce up to 5 percent and recreation on public lands up to 2 percent of total personal income of the Five County Area, exclusive of the Riverside-San Bernardino metropolitan area. The outdoor recreation industry on public land is therefore extremely important to the local communities near major recreation attractions and to those people who derive their income from trade and service type businesses.

Benchmark projections to 1980, made on the basis of a National Park Service report for the Lake Mead National Recreation Area, indicate that recreation demand will increase at the rate of about 6 percent per year or 66 percent from 1969 through 1980. To maintain its present share of total recreation use within the Five County Area, public lands would have to sustain about 13 million recreation days, or an additional 5.2 million recreation days (above present use levels), by 1980. The capability of public lands to meet these damands without resource deterioration depends heavily upon recreation management and appropriate recreation development programs. According to estimates in "The California Desert," recreation in the California desert would increase from 4.9 million in 1968 to 7.8 million in 1980. These numbers could increase three to four times with well planned recreation management and development programs.

Applying the same percent increase to use immediately adjacent to the Colorado River, the 1980 benchmark would be 7,793,000 recreation days. To maintain its present 30 percent of the total use along the river, public lands would have to sustain about 2,377,000 visitor days, or an increase of about one million. Without further development and management, public land visitor use may become stabilized or possibly decline slightly because of sanitation problems, resource deterioration and over-saturation. With proper management and development it is probable that public lands can supply substantially more than the projected one million visitor day increase in demand.

As has been indicated, total recreation use and recreation use of the public lands are very important to the local economy of the Five County Area. With proper management and development this use on public lands has the potential of becoming even more important in the future than at present.

Minerals

The total value of mineral production in the Five County Area for 1968 was about $239.4 million. About $40.6 million or 16.9 percent was produced from the public lands. All production from public lands in the Arizona counties was from sand and gravel and stone. Production in the California counties included sand and gravel, stone, rare earths, and salines.

The 16.9 percent mineral industry dependence on public lands is somewhat misleading for future dependence. Much of the present production is from lands patented under the mining laws. This indicates a much higher actual dependence on public lands than is shown by the above production data. Most public lands are open to mineral location while many other lands are not; therefore future mineral industry dependence on public lands may be expected to exceed 35 percent.

The Five County Area is dependent on the mineral industry for about 1.4 percent of its total personal income. Income generated by the mining industry, including the multiplying effect within the community, is about $57.8 million out of $4.2 billion in total personal income. Mining industry income generated from public lands is about $8.6 million. This represents about .2 percent of the Five County Area's total personal income attributable to mining operations on public lands. Community dependence on public lands would be somewhat higher if income from lands patented from the public lands for mining purposes were considered.

Although mining produces only a small part of the communities' total personal income, it should be recognized that mineral products are basic resources required either directly or indirectly in almost all other sectors of economic activity.

The demand for mineral production, in terms of value of minerals produced in constant dollars, is projected to increase by about 17.5 percent by 1980. In order to maintain its current share of production, an increase of about $7.1 million from public lands would be required. Because of the uncertainty of mineral deposits within the Five County Area, no attempt is made to indicate the potential for public lands to meet the projected increase in demand. Mining is, however, expected to continue to be an important part of the Five County Area economy because of the dependence of almost all economic sectors on various mineral commodities, many of which are produced in the area.

Industry Comparisons

Slightly different monetary measures are used in computing resource industry dependence on public land resources (Table 1). These measures are reasonably comparable, however, because each represents the gross money exchange in the local economy for the initial product either to or from the initial producer or user.

Considering total money exchanged, the resource industries, in descending order of importance, are: Livestock, mining, recreation (including nonconsumptive use of wildlife), and hunting. In contrast, the industry importance of production from public lands, in descending order, are: Mining, recreation, livestock and hunting.

Hunting is, however, the most dependent on public lands while livestock is the least dependent (Table 1).

Community dependence on resource industry production shows a similar pattern except that the Five County Area is more dependent on recreation from public lands than on mining from public lands for its personal income--a reverse from relative importance by gross monetary measures.

The Five County Area economy depends upon the four resource sectors (Table 1) for about 8.8 percent of its total personal income. The hunting contribution is almost insignificant, producing .04 percent of the total. Livestock is a major sector with over 6 percent of total personal income, while mining and recreation are of significant importance producing about 1.4 and 1.3 percent, respectively.

In contrast, community dependence on public land resource production is reversed except for hunting which remains the least important at .03 percent of total personal income. Livestock from public lands is relatively insignificant producing only .04 percent of total personal income. Mining is about five times more important than livestock at .2 percent, and recreation is about 12 times more important than livestock, producing almost .5 percent of total personal income. The Five County Area depends on public land resource production for almost .8 percent of its total personal income. Although this appears relatively insignificant, it must be recognized that dependence on public land resources, exclusive of the metropolitan area (Riverside-San Bernardino-Ontario) is of much greater significance and produces about $32.5 million in total personal income. The bar graph in Figure 1 shows the relative importance of each resource sector and the public land share of each sector.

It must be remembered that the initial users of the forage resource depend on this resource for at least part of their livelihood. This important distinction is shared by some users of the mineral resource and separates this dependence from the kind typical of the initial users of recreation and hunting resources. In the latter cases, the dependence does not affect the initial users' livelihood. Secondary users (suppliers of goods and services) do, however, depend upon these uses for part of their livelihood.

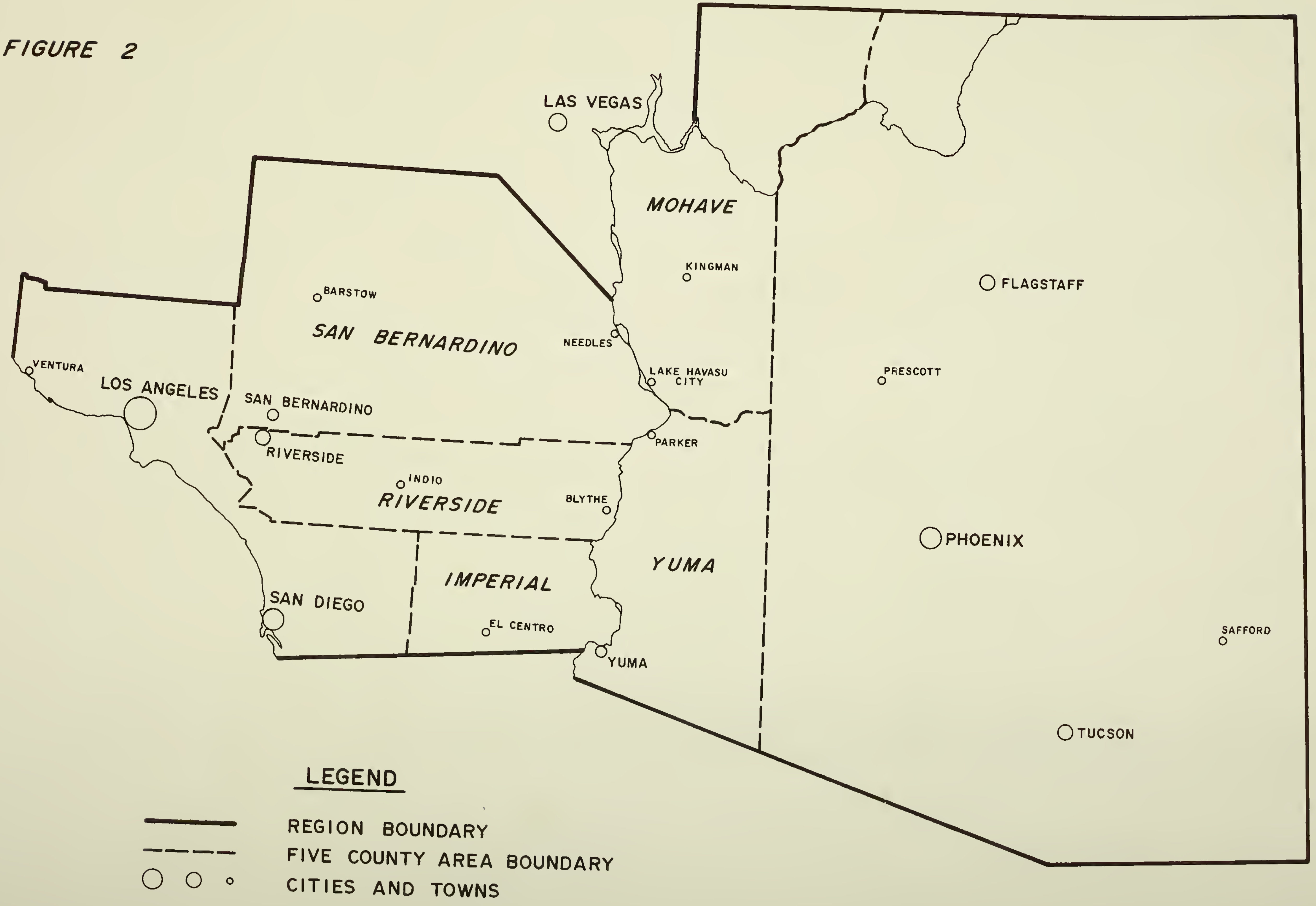
When the analysis shifts to a comparison of the community dependence on the various resources, the above distinction ceases to exist.

Other Resources and Land Use

Vegetative products, water and land use are not analyzed in the same way as the other resource industries. Harvesting of vegetative products within the Five County Area is very limited, and the value of production is insignificant to the economy of the area. Water and land use are both most important to the economy but are not subject to measurement and analysis in the same economic terms as livestock production, recreation and minerals (refer to the body of the Supplement for a brief analysis of each).

LOWER COLORADO RIVER COOPERATIVE PLANNING AREA
SPECIAL ECONOMIC SUPPLEMENT
SOUTHERN CALIFORNIA — ARIZONA REGION

FIGURE 2



II. INTRODUCTION

PURPOSE:

The Lower Colorado River Special Economic Supplement provides a detailed analysis of the general economy of the area and the resource production from public lands[1] compared to the total resource production of the area. The purpose of the data and analysis provided in this supplement is to assist the resource manager in allocating between resources where conflicts between these resources exist.

ANALYTICAL AREAS:

Region

District data are usually compared to statewide data in order to show relative importance and state or regional significance. In the case of the Lower Colorado River region, a regional area rather than one state is necessary for these comparisons. The region selected as the most logical by the special economic supplement team consists of the entire state of Arizona and the southern California area of Imperial, Los Angeles, Orange, Riverside, San Bernardino, San Diego and Ventura Counties, which includes the Los Angeles metropolitan area (Figure 2). This region is designated as the "Southern California-Arizona Region," and referred to throughout this supplement as the "Region."

District Statistical Region

Normally a district statistical region includes those counties which most closely correspond to the boundaries of the District. In the case of the Lower Colorado River Office, there are no administrative or statutory boundaries. Planning data are being collected on an area along each side of the Colorado River agreed to by the California and Arizona State Offices and the Phoenix, Riverside, and Lower Colorado River Offices sharing planning responsibility. This area encompasses only a small part of the counties involved in both Arizona and California. Since most economic data are available on a county basis, the statistical region selected for the Lower Colorado River Cooperative Planning Area is Mohave and Yuma Counties in Arizona, and Imperial, Riverside, and San Bernardino Counties in California (Figure 3). This statistical region is referred to throughout this supplement as the "Five County Area."

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[1] "Public Lands" are defined as those lands in public ownership administered in whole or in part by the Bureau of Land Management. The terms "BLM," "BLM Lands," or "Public Lands" used in the tables throughout this document refer to "Public lands" and/or "resource production from public lands."

Community Impact Areas

Community impact areas are geographic units corresponding to basic trade areas. They include trade centers large enough to provide a significant part of the economic needs of the people living within the area. Since economic data are available on a county basis, community impact areas are individual counties or groups of counties. The Five County Area is divided into four community impact areas (Figure 3). These are: Mohave County in Arizona, which depends upon Kingman as its primary trade center; Yuma County in Arizona, which depends upon Yuma as its primary trade center; Imperial County in California, which depends upon El Centro as its primary trade center; and Riverside and San Bernardino Counties combined, with the Riverside-San Bernardino-Ontario metropolitan area as the primary trade center. Riverside and San Bernardino Counties are combined into one community impact area because much of the economic data are collected on the Riverside-San Bernardino-Ontario Standard Metropolitan Statistical Area which includes all of both counties. Detailed data are, however, shown separately for these two counties where possible.

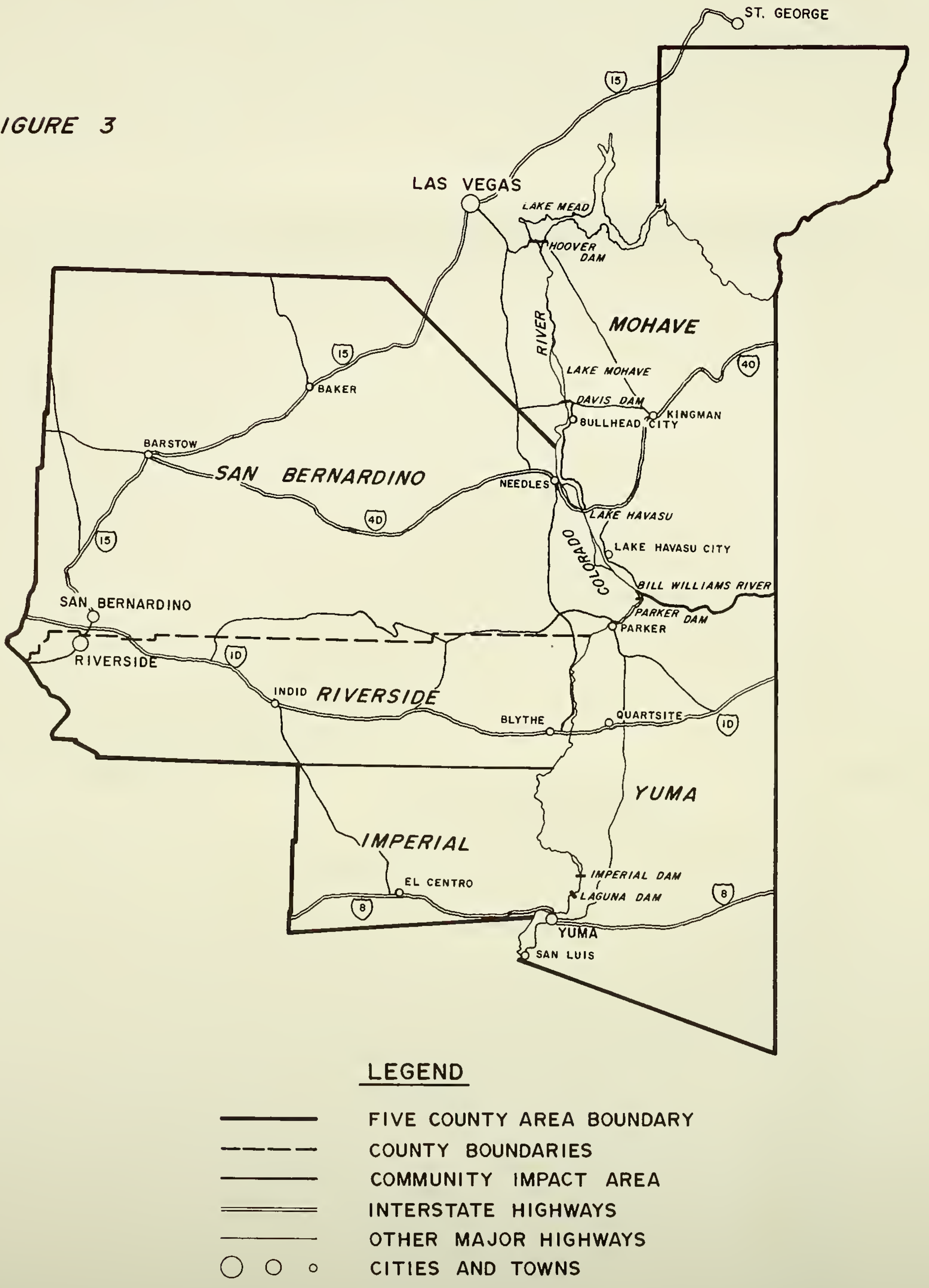
There are several smaller trade centers of significance, including Blythe, Indio and Needles; however, these cannot be used because county data are not disaggregated for these communities.

User Influence Zones

These zones identify the area from which initial users of resources (specifically resources produced from public lands) originate. The zone for the various resources will vary greatly. For example, initial users of mineral and forage resources (ranchers and mining operations) tend to be from the local area, whereas initial users of recreation and wildlife resources are more likely to be from major population centers. Figure 4 depicts the zones where the majority of users of resources produced in the Five County Area originate.

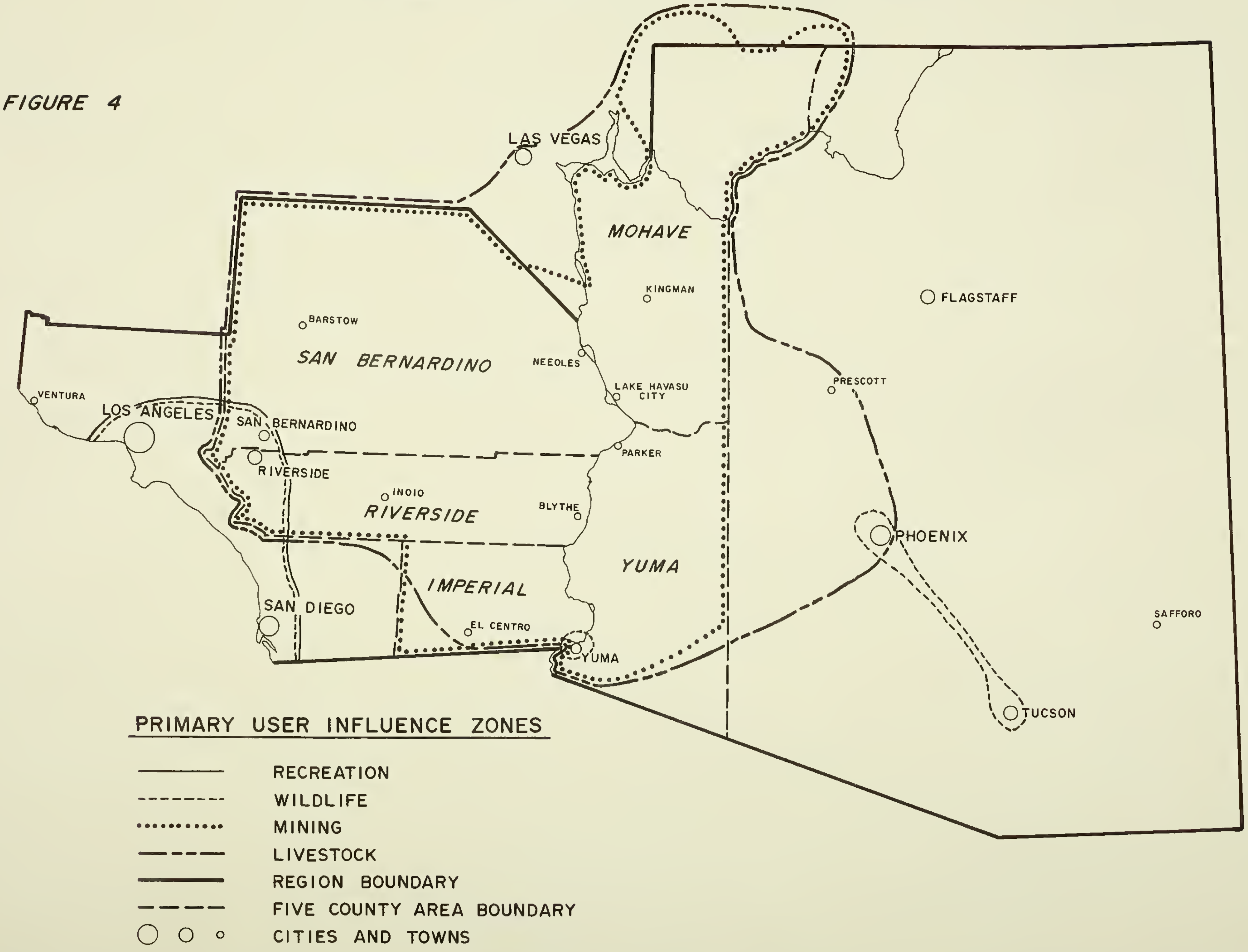
LOWER COLORADO RIVER COOPERATIVE PLANNING AREA
SPECIAL ECONOMIC SUPPLEMENT
FIVE COUNTY AREA

FIGURE 3



LOWER COLORADO RIVER COOPERATIVE PLANNING AREA
SPECIAL ECONOMIC SUPPLEMENT
SOUTHERN CALIFORNIA — ARIZONA REGION

FIGURE 4



BENCHMARK PROJECTIONS

Planning, by its very nature, is focused on the future. Resource managers need to know what to expect in terms of future changes in supply and demand that may affect public land resources. For this reason, "benchmark projections" are made for each public land resource product. These projections indicate the amount of resource products required in 1980 if the public land is to continue providing the same share of the total market as it does today. For example, if the public land is supplying 10 percent of the total forage in the state, district, or other study area, and the demand for livestock is expected to rise 25 percent by 1980, then the benchmark projection shows how much forage must be harvested from public lands in 1980 if these lands continue to supply 10 percent of the total market demand.

This projection is not a target but rather a reference point for further analysis. Obviously, the fact that total demand for forage is expected to increase by 25 percent does not mean that BLM should plan to increase production (supply) by this amount. The key factor is the analysis of why the benchmark projections may be too high or too low for the public lands within the study area.

Projections may be at nearly any level of complexity, from a simple extension of past trends to an extremely complex analysis of the factors that cause the demand to change.

INCOME MULTIPLIERS:

The concept of income multipliers is useful in assessing the total impact of resource use in a community or area. The economy of any area is a complex set of interrelationships between initial users, processors, final users and service activities. These interrelationships are the mechanism by which income is generated in the local economy. Therefore, if new money is injected into the economy, a multiplier effect can be expected on income as the new money generates additional activity in the economy.

There are two basic methods for estimating the multiplier effect: the first is to measure the interrelated flow of production between sectors of the economy, and the second is to estimate the multiplier effect directly from an analysis of aggregated exports, imports, and local production. It is the latter method which was used in computing the multipliers used in this study.[2/]

[2/] Estimating Economic Zone Expansion Technique - Computation of Multipliers is on file in Arizona State Office (1606).

In evaluating the impact of resource use at the county, Five County Area, and Regional levels, only direct income measurements have been used for initial users and industries. Income multipliers have then been applied to these income figures in order to assess the impact of resource use on the economy of any given county, community impact area, or region as a whole. For example, if the earnings in the livestock industry of a particular county were $380,500, and the multiplier for this industry was 1.716, then the actual impact in the total economy of the county would be about $653,000; this is because the multiplier includes the effects of the new money brought into the economy by livestock product exports.

III. FIVE COUNTY AREA ECONOMY

POPULATION:

The population of the Five County Area is about 1.3 million compared to a Regional population of 13.2 million. Over 93 percent of the Five County Area population live in the California counties, with most of the inhabitants living in the Riverside-San Bernardino-Ontario metropolitan area. Except for this metropolitan area, the Five County Area is very sparsely populated (Table 2). The population density in Mohave and Yuma Counties is 1.9 and 6.1 persons per square mile, respectively, while the densities for Imperial, Riverside, and San Bernardino Counties are 17.4, 64.0 and 34.0 persons per square mile, respectively. It should be recognized, however, that the population densities of the California counties outside the metropolitan area are very similar to the population densities of the Arizona counties.

The total population for the Lower Colorado River Valley (census of tracts adjoining Colorado River) is about 89,000. This represents about 7 percent of the total population of the Five County Area. In Mohave and Yuma Counties, about 45 and 93 percent of the population, respectively, live along the River Valley, while the percent of the total in California counties varies from less than 1 percent to about 3 percent.

The population growth rate between 1950 and 1960 for the Five County Area was about 7 percent per year, or 70 percent for the decade. The growth rate decreased to about 4 percent per year for a total of 40 percent during the period from 1960 to 1970. Although the rate of increase dropped by about 3 percent per year, the total population increase in the 1960 decade was almost as great as the total increase in the 1950 decade--368,000 for the sixties and 385,000 for the fifties. The growth rate for the Five County Area is slightly higher than the regional growth rate of 6.2 percent per year or about 62 percent for the 1950-60 decade and 2.8 percent per year or about 28 percent for the 1960-70 decade.

Net migration into southern California accounted for the major part of the population increase between 1950 and 1960. During this decade, growth from natural increase was only half of that from net migration (Table 3). Data for components on population change are not available for the Arizona part of the Region for the period 1950-60.

During the 1960 decade, the ratio of net migration to natural increase changed drastically in the Region. The ratio is about 1 to 1, with the natural increase being very slightly higher than the net migration figure (Table 3).

The components of population change for the California part of the Five County Area were similar to the southern California area during the 1950-60 decade. Net migration is still the major component of population increase in the Five County Area for the 1960-70 decade; it amounted to an increase of about 201,000, while the natural increase accounted for about 137,000 in population growth. Yuma and Imperial Counties are exceptions. Yuma County showed a net migration of about 6,000 compared to the natural increase of about 8,600, while Imperial County showed a net migration of minus 11,800 compared to a natural increase of 12,400. The other three counties showed a greater net migration than natural increase. It is interesting to note that the agricultural counties are the only two where the natural increase exceeds the net migration.

The population within the Colorado River Valley (census tracts adjacent to the Colorado River) actually decreased by 1.5 percent on the California side while increasing by almost 60 percent on the Arizona side (Table 4). The Kingman South Division experienced a 745 percent increase in population from 1960 to 1970 (1,362 to 11,520). This was due to the development and growth of Lake Havasu City and to growth around Bullhead City, Arizona, adjacent to the Colorado River.

The difference in population growth between Arizona and California along the river appears to be tied to land use policies, taxes, and availability of land for development. Whether this one-sided growth pattern will continue is uncertain. However, continued growth at Lake Havasu City and the proposed Planet Townsite development on the Bill Williams River in Arizona, indicate that the accelerated growth rate will probably continue.

The rural-urban population distribution for the Region and the Five County Area follows the same pattern as the national trend, which is one of increasing urban and decreasing rural populations (Table 5). The Regional distribution is 94.1 percent urban and 5.9 percent rural compared to the Five County distribution of 84 percent urban and 16 percent rural. The Mohave County rural-urban distribution is reversed from the remainder of the area with 71.7 percent rural and 28.3 percent urban. This ratio is due to counting Lake Havasu City as rural population. The urban to rural ratios are also substantially lower for Yuma and Imperial Counties than the Five County average. The trend toward urbanization is expected to continue in the Five County Area.

Population within the Five County Area is projected to increase from about 1.3 million in 1970 to over 1.8 million, or about 42 percent, by 1980. The majority of this increase may be expected in the western (metropolitan) area of Riverside and San Bernardino Counties. In comparison, the population of the Region is projected to increase from about 13.2 million in 1970 to about 16.4 million in 1980, or an

increase of about 24.8 percent (Table 2). This projected rate of increase is slightly lower for the next 10 years than for the past 10 years for the Region but slightly higher for the Five County Area. No projections have been made for the census tracts adjacent to the Colorado River. However, there is little evidence to indicate any drastic changes from the last 10-year trend. Should past trends continue, the California population adjacent to the Colorado River will probably remain static or decline slightly, while Arizona population adjacent to the river area will increase rapidly.

The age distribution for the Five County Area does not vary significantly from that of the Region. Several counties, however, show slight variations (Table 6). In Mohave County, the 18-24 age bracket has 7.2 percent compared to 13.6 percent for Yuma, and a Regional average of 12.2 percent. This appears to reflect the tendency for young adults to leave Mohave County in search of areas with more opportunities. The percent of persons in the 25-64 and 65-and-over brackets is above average for Mohave County but below average for Yuma. The percent in age bracket 5-17 is noticeably high in Imperial County, while the 25-64 and 65-and-over brackets are below average. This may be a reflection of the agricultural economy where there tend to be many farm worker families with young children.

Trend information shows that the proportion of population under age 25 is increasing, while the 25 to 64 group is decreasing. This trend is expected to continue through 1980. The retirement age group (65 and over) is also increasing and is projected to be over 1.5 million by 1980.

The sex ratio of males to females in the population shows about 1 percent more females than males in the Five County Area compared to 2 percent more females than males in the Region (Table 6). However, in Mohave and Yuma Counties a more "frontier" type ratio exists in which males outnumber females by 3 percent. The ratio for Imperial, Riverside, and San Bernardino Counties is about the same as the Five County Area.

In terms of racial differences, the overall percentage breakdown between Southern California and Arizona is not large: 11.1 percent non-white in Southern California and 9.4 percent in Arizona (Table 7).

The major difference between the two areas is the much larger percent of negroes in Southern California (7.8 percent) as compared to 3.0 percent for Arizona. On the other hand, Arizona has a larger percent of "Other"[3/] --6.4 percent for Arizona compared to 3.3 percent for California.

[3/] "Other" is a designation that includes several ethnic backgrounds other than Anglo-American, Spanish or Mexican-American, and black races; it includes Oriental, Indian, etc. (1970 census of population, General Population Characteristics, Arizona, USDC, Bureau of the Census)

Within the Five County Area 93.4 percent of the residents are white (including Spanish or Mexican-American). Of the remainder, 4.2 percent are negro and 2.4 percent are "other" (mostly Indian).

Within the immediate influence zone of the river (census tracts adjacent to the river), the white population is probably higher than the averages for the Region or for the Five County Area. This is because most of the negro population is found in large urban localities such as Los Angeles, Riverside and San Bernardino. The racial groups in the Colorado River Valley (census tracts adjacent to the river) are: White (over 95%), Negro (less than 1%), Indian and other (about 4%).

TABLE 2. - POPULATION AND POPULATION PROJECTIONS

	Area (sq.mi.)	1970			1980 Projection			
		Population	Percent of total	Density per sq.mi.	Population	Percent of total	Percent increase	Density per sq.mi.
Arizona	113,575	1,770,900	13.4	15.6	2,381,850	14.5	34.5	21.0
Southern California[1]	42,562	11,404,383	87.6	268.0	14,060,000	85.5	23.3	330.3
REGION TOTAL	156,137	13,175,283	100.0	84.4	16,441,850	100.0	24.8	105.3
Arizona								
Mohave (all)	13,403	25,857	2.0	1.9	44,400[2]	2.4	94.3	3.3
Yuma	10,020	60,827	4.7	6.1	88,750	4.8	45.9	8.9
Subtotal	23,423	86,684	6.7	3.7	133,150	7.2	53.6	6.7
California								
Imperial	4,284	74,492	5.7	17.4	95,000[3]	5.1	27.5	22.2
Riverside	7,179	459,074	35.2	64.0	740,000	40.0	61.2	103.3
San Bernardino	20,131	684,072	52.4	34.0	885,000	47.7	29.4	44.0
Subtotal	31,594	1,217,638	93.3	38.5	1,720,000	92.8	41.3	54.4
TOTAL	55,017	1,304,322	100.0	23.7	1,853,150	100.0	42.1	33.7

[1] Ventura, Los Angeles, Orange, San Diego, Riverside, San Bernardino, Imperial

[2] Series I-C, developed by BLM from Arizona Employment Security Commission, Population Estimates Ariz. 1969.

[3] Projection from OBE-ERS and is between Series I-C and I-D

Source: USDC, Bureau of the Census, Number of Inhabitants Arizona and California 1970.

TABLE 3. - POPULATION TRENDS AND COMPONENTS OF CHANGE 1950-70

	Population Trend[1]					Components of Change[2]			
						1950-1960		1960-1970[3]	
	1950	1960	Percent increase	1970	Percent increase	Natural increase	Net migration	Natural increase	Net migration
Arizona	749,581	1,302,161	73.7	1,772,482	36.1	N/A*	N/A	227,269	243,052
So. California	5,554,029	8,937,200	60.9	11,404,383	26.9	1,101,350	2,200,450	1,220,700	1,191,600
REGION TOTAL	6,303,616	10,239,361	62.4	13,176,865	28.6	N/A	N/A	1,447,969	1,434,652
Arizona									
Mohave (all)	8,510	7,736	-9.1	25,857	234.0	N/A	N/A	1,589	+16,532
Yuma	28,006	46,235	65.0	60,827	31.6	N/A	N/A	8,661	+ 5,931
Subtotal	36,516	53,971	47.8	86,684	60.6	N/A	N/A	10,250	+22,463
California									
Imperial	62,975	72,105	15.9	74,492	3.3	15,850	-5,200	12,400	-11,800
Riverside	170,046	306,191	80.1	459,074	49.9	36,900	102,050	39,400	101,100
San Bernardino	281,642	503,591	78.8	684,072	36.0	69,550	148,050	75,200	90,000
Subtotal	514,663	881,887	71.4	1,217,638	38.1	122,300	244,900	127,000	179,300
TOTAL	551,179	935,858	69.8	1,304,322	39.4	N/A	N/A	137,250	201,769

[1] U. S. Dept. of Commerce, Bureau of Census, Number of Inhabitants Arizona and California 1960 and 1970.
[2] California estimates for components of change by California Department of Finance, Budget Division.
[3] Components of change for Arizona for 1960-70 estimated by the Arizona Department of Economic Planning and Development.

Note: In some cases the sum of the components of change do not agree with the total change. These variations are due to revisions in census figures and rounding errors, exaggerated by different sources of data.

* Not available.

TABLE 4. - POPULATION OF RIVER INFLUENCE AREA WITH COUNTY COMPARISONS AND POPULATION CHANGE

	1970 Population		1960 Population		Percent Change 1960-70	
ARIZONA						
MOHAVE COUNTY	25,857		7,736		234.	
Kingman S. Div.		11,520		1,362		745.8
YUMA COUNTY	60,827		46,235		31.6	
Parker Div.		9,579		4,759		101.3
Somerton Div.		3,668		3,511		4.5
Yuma East Div.		36,624		27,900		31.3
Yuma West Div.		7,338		5,452		34.6
SUBTOTAL		68,729		42,984		59.9
CALIFORNIA						
IMPERIAL COUNTY	74,492		72,105		3.3	
Winterhaven-Bard Div.		2,316		1,973		17.4
RIVERSIDE COUNTY	459,074		306,191		49.9	
Palo Verde Div.		12,250		12,523		-2.2
SAN BERNARDINO COUNTY	684,072		503,591		35.8	
Needles Div.		5,872		6,256		-6.1
SUBTOTAL		20,438		20,752		-1.5
TOTAL		89,167		63,736		39.9

Source: U.S. Department of Commerce/Bureau of the Census
1970 Census of Population, Advance Report

TABLE 5. - RURAL-URBAN POPULATION DISTRIBUTION, 1970

	URBAN			RURAL		
	1970		1960[1]	1970		1960[1]
	Total	%	%	Total	%	%
ARIZONA	1,408,864	79.6	74.5	362,036	20.4	25.5
SO. CALIFORNIA	10,981,966	96.3	93.8	421,417	3.7	6.2
REGION TOTAL	12,390,830	94.1	91.4	783,453	5.9	8.6
ARIZONA						
Mohave (all)	7,312	28.3	58.5	18,545	71.7	41.5
Yuma	38,019	62.5	57.9	22,808	37.5	42.1
Subtotal	45,331	52.3	58.0	41,353	47.7	42.0
CALIFORNIA						
Imperial	50,233	67.4	63.5	24,259	32.6	36.5
Riverside	360,285	78.5	67.6	98,789	21.5	32.4
San Bernardino	611,701	89.4	74.4	72,371	10.6	25.6
Subtotal	1,022,219	84.0	71.1	195,419	16.0	28.9
TOTAL[2]	1,067,550			236,772		

Source: U.S. Department of Commerce/Bureau of the Census - 1970 Census of Population, Advance Report

[1] U.S. Department of Commerce, Bureau of the Census - County and City Data Book - 1967

[2] Five County Area Population (Yuma and Mohave Counties, Arizona; Imperial, Riverside and San Bernardino Counties, California).

TABLE 6. - GENERAL POPULATION CHARACTERISTICS

AGE and SEX - 1970

	Age										Sex	
	Under 5		5 - 17		18 - 24		25 - 64		65 and over		%	%
	%	Number	%	Number	%	Number	%	Number	%	Number	Male	Female
ARIZONA	9.0	158,675	27.4	485,300	11.9	211,479	42.6	753,972	9.1	161,474	49.2	50.8
SO. CALIFORNIA	8.4	959,332	24.9	2,838,225	12.2	1,388,489	45.5	5,193,242	9.0	1,025,097	49.0	51.0
REGION TOTAL	8.5	1,118,007	25.2	3,323,525	12.2	1,599,968	45.1	5,947,214	9.0	1,186,571	49.0	51.0
ARIZONA												
Mohave (all)	8.6	2,224	25.6	6,620	7.2	1,852	48.2	12,471	10.4	2,690	50.6	49.4
Yuma	9.2	5,603	27.8	16,899	13.6	8,299	41.7	25,379	7.6	4,647	51.9	48.1
Subtotal	9.0	7,827	27.1	23,519	11.7	10,151	43.7	37,850	8.5	7,337	51.5	48.5
CALIFORNIA												
Imperial	9.7	7,242	31.7	23,642	9.9	7,353	41.2	30,715	7.4	5,540	49.5	50.5
Riverside	8.2	37,669	25.6	117,627	10.7	49,064	42.3	194,131	13.2	60,583	49.0	51.0
San Bernardino	8.7	59,413	27.2	185,946	12.0	82,275	42.6	291,137	9.5	65,301	49.5	50.5
Subtotal	8.6	104,324	26.9	327,215	11.4	138,692	42.4	515,983	10.8	131,424	49.3	50.7
TOTAL	8.6	112,151	26.9	350,734	11.4	148,843	42.4	553,833	10.8	138,761	49.5	50.5

Source: 1970 Census of Population, General Population Characteristics, Arizona and California.
U.S. Department of Commerce, Bureau of the Census

TABLE 7. - GENERAL POPULATION CHARACTERISTICS

RACE - 1970

	White		Negro		Other	
	Number	%	Number	%	Number	%
ARIZONA	1,604,948	90.6	53,344	3.0	112,608	6.4
SO. CALIFORNIA	10,139,215	88.9	894,465	7.8	370,703	3.3
REGION TOTAL	11,744,163	89.1	947,809	7.2	483,311	3.7
ARIZONA						
Mohave	24,850	96.1	21	0.1	986	3.8
Yuma	55,793	91.7	1,991	3.3	3,043	5.0
Subtotal	80,643	93.0	2,012	2.3	4,029	4.7
CALIFORNIA						
Imperial	68,806	92.4	2,586	3.5	3,100	4.2
Riverside	427,525	93.1	21,224	4.6	10,325	2.3
San Bernardino	641,481	93.8	29,250	4.3	13,341	2.0
Subtotal	1,137,812	93.5	53,060	4.4	26,766	2.2
TOTAL	1,218,455	93.4	55,072	4.2	30,795	2.4

Source: U.S. Department of Commerce/Bureau of the Census, 1970 Census of Population, General Population Characteristics; Arizona and California

INCOME:

Riverside and San Bernardino Counties supply the major part of the total personal income--over $3.5 billion of the nearly $4 billion. In these two counties the western urbanized areas account for the bulk of the county income. Were the data to exclude these areas, the five counties would probably have similar total personal income patterns.

The per capita personal income for the Five County Area ($3,211) is substantially below the Regional average of $4,078, but is very comparable to the average for Arizona of $3,372. Yuma County is the only county which has a higher per capita personal income ($3,581) than the average for the State of Arizona ($3,372); however, all five counties are below the Regional average.

The Five County average disposable income per household is $9,760 compared to the Regional average of $11,217. All counties in the Five County Area are below both the Regional and State average disposable income levels. (Table 8.)

Of the five counties, Mohave appears to be the least affluent. Both the per capita personal income ($2,564) and the per household disposable income ($8,076) are the lowest of any county concerned. It also has the highest percentage of poverty-level families (families with less than $3,000 cash income per year). The most affluent county seems to be either Yuma, which has the highest per capita personal income ($3,581), or San Bernardino, which has a lower per capita personal income but the highest per household disposable income ($9,928).

It appears that Yuma and Imperial Counties are quite similar in that both have high per capita personal income levels and low per household disposable incomes. These two counties have the highest percentage of personal income from the "Proprietors" sector, both being over one-fifth of the total. This reflects the strong impact of agriculture which usually has a high ratio of proprietors to wage earners.

Wages and salaries produce almost 61 percent of the total personal income in the Five County Area compared to almost 67 percent for the Region. Income from wages and salaries varies from a low of 50 percent of total personal income in Imperial County, to a high of about 73 percent in Mohave County (Table 9).

Transfer payments which include pensions, welfare, unemployment benefits, disability benefits and Medicare make up 12.9 percent of the total personal income for the Five County Area compared to 9.3 percent for the Region. These figures indicate an above average concentration of either retirees, persons on welfare or unemployment, or a combination of these factors within the Five County Area. There is a wide variance

in transfer payments between the counties within the Five County Area. Yuma County at 8.1 percent is below the Regional average of 9.3 percent; Imperial County at 9.8 percent is slightly above the Regional average; while Mohave, Riverside and San Bernardino Counties at 11.1, 14.2 and 12.9 percent, respectively, are well above the Regional average.

Office of Economic Opportunity community profile data for the counties showed that the poverty level cut-off for 1966 was from about $2,700 to $2,900 for the counties of the Five County Area. Although current poverty level cut-off figures are not available, $3,000 is assumed to be a reasonable cut-off. Information on percent of households by cash income group (Table 8), which shows the percent of families below the $3,000 income level, is available only for the individual states and counties involved and not for Region or the Five County Area as a whole. All counties within the Five County Area have a higher percentage of families below the $3,000 poverty cut-off level than their respective states. The more populous counties generally have a lower percentage of households within this income class. Mohave County, which has the lowest population figure, has over one-fourth of all households reported below the $3,000 personal income level. By contrast, San Bernardino County, the most populous county, has only 16.2 percent of its households below the $3,000 poverty cut-off level. In summary, the rural areas of the Five County Area appear to have a higher percentage of families within the lower groups than do the metropolitan areas. The agricultural wealth of Yuma and Imperial Counties and the suburban areas of Riverside and San Bernardino tend to disguise this trend to some extent.

The most important economic sectors from the standpoint of earnings produced are, in descending order of importance: Manufacturing, state and local government, wholesale and retail trade, services, Federal government, and farm earnings (Tables 10 and 11). Individual counties vary significantly from the Five County Area, however. Farm earnings rank first in Yuma and Imperial Counties but drop to eighth and tenth in San Bernardino, Riverside, and Mohave Counties. Contract construction, while eighth in order of importance for the Five County Area, is the most important producer of earnings in Mohave County. This is primarily due to a current high level of construction at Lake Havasu City and Bullhead City along the Colorado River in Arizona. It must be recognized that these figures are for only one year, yet they reflect the current trend of population growth and the resulting demand for housing in this area. The rapid population growth which causes an increase in the demand for housing, commercial buildings and highways, has caused the contract construction sector in Mohave County to increase in earnings from $5,601,000 in 1968 to $14,006,000 in 1969. The wholesale and retail trade sector and the services

sector are also exceptionally high producers of earnings in Mohave County. This appears to be a reflection of the high level of outdoor recreation use within the area. In contrast, the agricultural counties (Yuma and Imperial) show a relatively low percent of earnings from the services sector.

TABLE 8. - PERSONAL INCOME

	Total Pers. Income[1] ($000)	Per Capita Pers. Income[1]	Per. Hsld. Disp. Income[2]	% Hslds. by Cash Income Group[2]				
				0 - 2999	3000 - 4999	5000 - 7999	8000 - 9999	10,000 - over
ARIZONA	5,702,620	3,372	10,011	18.7	12.6	22.4	14.8	31.4
SO. CALIFORNIA	47,997,200	4,200	11,412	15.3	10.1	19.4	15.3	39.9
REGION TOTAL	53,699,820	4,078	11,217	N/A	N/A	N/A	N/A	N/A
ARIZONA								
Mohave	61,713	2,564	8,076	25.7	14.9	25.0	14.3	20.1
Yuma	217,217	3,581	9,297	20.7	13.5	25.5	13.5	26.8
Subtotal	278,930	3,360	8,887	N/A	N/A	N/A	N/A	N/A
CALIFORNIA								
Imperial	283,200	3,408	9,382	22.1	12.8	23.0	14.4	27.6
Riverside	1,485,100	3,279	9,727	18.8	13.6	22.6	14.8	30.2
San Bernardino	2,147,400	3,180	9,928	16.2	11.9	22.7	17.2	32.1
Subtotal	3,915,700	3,200	9,820	N/A	N/A	N/A	N/A	N/A
TOTAL	4,194,630	3,211	9,760	N/A	N/A	N/A	N/A	N/A

Source: Data for % of Households in the several Income Groups is from July 10, 1971, issue of Sales Management Magazine.
All other income data for Arizona are from OBE Regional Economics Information System and Arizona Statistical Review - 1970.
All other income data for California are from the California Statistical Abstract - 1970.

[1] 1969 Data

[2] 1970 Data

TABLE 9. - PERSONAL INCOME BY MAJOR SOURCE[1]

	Wages & Salary		Other Labor		Proprietors		Property		Transfer Payments		Social Ins. Minus Figure[2]	
	($000)	%	($000)	%	($000)	%	($000)	%	($000)	%	($000)	%
ARIZONA	3,891,933	68.2	184,611	3.2	536,964	9.4	750,195	13.2	521,480	9.1	182,563	3.2
SO. CALIFORNIA	32,029,800	66.7	1,810,300	3.8	3,276,800	6.8	6,396,600	13.3	4,483,800	9.3	--	--
REGION TOTAL	35,921,733	66.9	1,994,911	3.7	3,813,764	7.1	7,146,795	13.3	5,005,280	9.3	182,563	0.3
ARIZONA												
Mohave	45,050	73.0	2,860	4.6	3,279	5.3	5,834	9.4	6,856	11.1	2,166	3.5
Yuma	134,825	62.1	3,452	1.6	49,440	22.7	17,710	8.2	17,643	8.1	5,853	2.7
Subtotal	179,875	64.5	6,312	2.3	52,719	18.9	23,544	8.4	24,499	8.8	8,019	2.9
CALIFORNIA												
Imperial	141,700	50.0	5,000	1.8	82,100	29.0	26,600	9.4	27,800	9.8	--	--
Riverside	842,500	56.7	38,100	2.6	162,000	10.9	231,700	15.6	210,900	14.2	--	--
San Bernardino	1,389,300	64.7	66,700	3.1	164,900	7.7	248,800	11.6	277,600	12.9	--	--
Subtotal	2,373,500	60.6	109,800	2.8	409,000	10.4	507,100	13.0	516,300	13.2	--	--
TOTAL	2,553,375	60.9	116,112	2.8	461,719	11.0	530,644	12.6	540,799	12.9	8,019	0.2

Source: Data for Arizona are from OBE Regional Economics Information System, Arizona Statistical Review, 1970.
Data for California are from the California Statistical Abstract - 1970.

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[1] 1969 Data

[2] Social Insurance is already deducted by source from California data.

TABLE 10. - EARNINGS BY MAJOR ECONOMIC SECTOR - 1969
$000

	Mohave	Yuma	Arizona Subtotal	Imperial	San Bdo-Riverside	California Subtotal	Five County Total
Total P.I.	61,713	217,217	278,930	324,380	3,491,682	3,816,062	4,094,992
Property Income	5,834	17,710	23,544	38,544	425,955	464,499	488,043
Transfer Payments	6,856	17,643	24,499	31,839	491,345	523,184	547,683
Farm Earnings	414	55,528	55,942	117,132	140,938	258,070	314,012
Government	5,892	59,933	65,825	52,081	770,705	822,786	888,611
Federal	1,981	41,184	43,165	14,038	328,930	342,968	386,133
State & Local	3,911	18,749	22,660	38,043	441,775	479,818	502,478
Pvt. Non-Farm	44,883	72,256	117,139	94,396	1,794,719	1,889,115	2,006,254
Manufacturing	6,506	5,788	12,294	13,818	495,705	509,523	521,817
Mining	4,217	538	4,755	W	26,094	W	30,849
Construction	14,006	8,267	22,273	4,931	154,850	159,781	182,054
Trans, Comm, & Public Utilities	2,762	9,825	12,587	8,183	166,837	175,020	187,607
Wholesale/Retail Trade	7,813	23,079	30,892	40,281	419,458	459,739	490,631
Fin, Ins, & Real Estate	2,057	3,935	5,992	W	91,764	W	97,756
Services	7,475	19,184	26,659	17,175	424,845	442,020	468,679
Other	47	1,640	1,687	5,600	15,166	20,766	22,453

W=Withheld to avoid disclosure of data for individual reporting units; data are included in totals.

Source: OBE Regional Economics Information System, 1969 data; Note that the total personal income data for the California counties differs from the total personal income data in Table 8 (source California Statistical Abstract). The California Statistical Abstract total personal income data in Table 8 and OBE earnings data above are used throughout the remainder of this report for the necessary computations.

TABLE 11. - PERCENT OF EARNINGS BY MAJOR ECONOMIC SECTOR - 1969

	Mohave	Yuma	Arizona Subtotal	Imperial	San Bdo.-Riverside	California Subtotal	Five County Total	Ranking by Sector[1]
P. I.[2]	100	100	100	100	100	100	100	
Property Income	9.4	8.1	8.4	11.8	12.2	12.2	11.9	-
Transfer Payments	11.1	8.1	8.8	9.8	14.1	13.7	13.4	-
Farm Earnings	0.7	25.5	20.1	36.1	4.0	6.8	7.7	6
Government	9.5	27.5	23.6	16.0	22.1	21.6	21.7	-
Federal	3.2	18.9	15.5	4.3	9.4	8.9	9.4	5
State & Local	6.3	8.6	8.1	11.7	12.6	12.6	12.2	2
Pvt. Non-Farm	72.7	33.2	42.0	29.0	51.4	49.5	49.0	-
Manufacturing	10.5	2.6	4.4	4.2	14.2	13.4	12.7	1
Mining	6.8	0.3	1.7	W	0.8	W	0.8	10
Construction	22.7	3.8	7.9	1.5	4.4	4.2	4.4	8
Trans, Comm, & Public Utilities	4.4	4.5	4.5	2.5	4.8	4.6	4.6	7
Wholesale/Retail Trade	12.6	10.6	11.1	12.4	12.0	12.0	12.0	3
Fin, Ins. & Real Estate	3.3	1.8	2.1	W	2.6	W	2.4	9
Services	12.1	8.8	9.6	5.2	12.2	11.6	11.4	4
Other	0.1	0.8	0.6	1.7	0.4	0.5	0.5	11

W=Withheld to avoid disclosure of data for individual reporting units; data are included in totals.

[1] Ranking excludes property income and transfer payments.

[2] Sum of percents is over 100% because contribution for social insurance is included in earnings but not in total P.I.

Source: OBE Regional Economics Information System, 1969.

EMPLOYMENT:

Based on 1970 employment data, the total civilian employment in the Five County Area is about 8 percent of the Southern California-Arizona Regional total. About 362,800, or 85 percent, of the Five County employment is in Riverside and San Bernardino Counties, with the majority of this amount located in the metropolitan area in the west end of these two counties. The tabular data (Tables 12 and 13) for Mohave, Yuma and Imperial Counties give a good indication of employment by sector in the non-metropolitan area. However, no data are available for the non-metropolitan part of Riverside and San Bernardino Counties.

The major employment sectors, in descending order of importance, for the Five County Area are: Government, trade, services, and manufacturing. By comparison, the major employment sectors for the Region are: Manufacturing, trade, services, and government. Figures for the nation show that government is third in importance and services fourth in importance--a reverse of the situation in the Southern California-Arizona Region. Employment in the manufacturing sector is extremely low in Mohave, Yuma and Imperial Counties (range of 4 to 7 percent) compared to the Five County, Regional and national figures which show about 13, 22, and 26 percent, respectively, going to manufacturing.

Agriculture accounts for only 9 percent of the total Five County employment, yet is extremely important to Yuma and Imperial Counties. Only about 2 percent of Mohave County's total employment is in the agricultural sector. The employment figures tend to show that Mohave County agriculture (80 to 90 percent range livestock) is a relatively unimportant employer. In contrast, Yuma and Imperial Counties, where crop production and feeder livestock are dominant, the agricultural sector is the most important employer with 35 and 26 percent of the labor force, respectively. Employment in the mineral extraction industry in Mohave County is about 6 percent compared to less than 1 percent for the Five County Area, the Region, and the nation.

There are variances in employment percentages between counties for the other industry sectors; however, these variances appear to be somewhat insignificant in comparison to those discussed above. The trade and services sectors encompass most of the recreation activity. Recreation use is heavy along the Lower Colorado River and in some of the desert areas adjacent to the river within the Five County Area. It should be noted that the percent of employment in the trade and services sectors is slightly less within the Five County Area than in the Region and nation as a whole. This does not, however, necessarily reduce the importance of recreation to the trade and services sectors in the Five County Area because the ratio of recreation to other sales by these sectors may be greater than Regional or national averages. There are indications that much of the trade and services involved with making

use of recreation facilities along the Colorado River is generated in population centers outside the Five County Area. If this is true, then increases in recreation use along the river would not likely increase the percent of employment in the trade and services sectors.

Employment trends[4/] between the period 1960 to 1970 for the Five County Area show substantial gains in the services, retail trade, manufacturing, government, finance, insurance, and real estate sectors. Total employment in agriculture declined in each of the counties between 1960 and 1965, then increased in each of the counties except Imperial County, California, and Mohave County, Arizona. Transportation employment during the ten year period also experienced accelerated growth in Imperial County, but declined in Riverside and San Bernardino Counties. Regional trends (Arizona-Southern California) show steady rates of growth between 1960 and 1970 in all sectors except construction and agriculture.

Unemployment in 1970 was 6.0 percent for the Five County Area, compared to 5.7 percent for the Region. Imperial County showed the highest unemployment rate with 9.3 percent of its labor force unemployed. Mohave and San Bernardino-Riverside were within .1 percent of the Five County rate at 6.1 and 5.9 percent, respectively, while Yuma County maintained a relative low rate of 4.9 percent. BLM activities offer little opportunity for reducing the unemployment rate with the exception of increasing intensive recreation development which would increase employment in the wholesale and retail trade, services, and government sectors.

[4/] Source: Southern California Economy, Urbanomics Research Assoc., Arizona Statistical Review and Comprehensive River Basin Study, California and Lower Colorado Regions.

TABLE 12. - SOUTHERN CALIFORNIA - ARIZONA REGION EMPLOYMENT

	U.S. %[1]	Arizona	%	So. California[2]	%	Region Total	% of Total
1. Civilian Labor Force	--	689,200	--	4,919,600	--	5,608,800	--
2. Unemployment		35,200[5]	5.1	281,800	5.7	317,000	5.7
3. Total Civilian Employment	100	654,000	100.0	4,631,900	100.0	5,285,900	100.0
a) Non-Agric. Wage & Salary	94.0	544,800[6]	83.3	4,448,100	96.0	4,992,900	94.5
1) Manufacturing	25.8	90,300[6]	13.8	1,095,850	23.7	1,186,150	22.4
2) Mineral Extraction	0.8	20,600[6]	3.1	18,400	0.4	39,000	0.7
3) Contract Constr.	4.5	37,000[6]	5.7	206,500	4.5	243,500	4.6
4) Transportation, Comm. & Public Utilities	6.0	30,000[6]	4.6	238,900	5.2	268,900	5.4
5) Trade (Wholesale & Retail)	18.9	127,300[6]	19.5	1,005,400	21.7	132,700	21.4
6) Finance, Ins. & Real Estate	5.9	30,000[6]	4.6	247,100	5.3	277,100	5.2
7) Services	15.4	90,800[6]	13.9	943,100	20.4	1,033,900	19.5
8) Government (State, Federal & Local)	16.8	118,800[6]	18.1	688,350	14.8	807,150	15.3
b) All Other Non-Agric. Empl.[3]	4/	73,500[5]	11.2	114,100	2.5	187,600	3.5
c) Agriculture	6.0	35,700[5]	5.5	72,900	1.5	108,600	2.0

Source: California - Dept. of Human Resources Development, 1970; Arizona Employment Security Comm., 1970.

[1] 1971 Economic Report of the President.
[2] Includes: Los Angeles, Riverside, San Diego, San Bernardino, Orange, Imperial, Ventura Counties.
[3] Includes fishing.
[4] Included under Non-Agric. Wage and Salary.
[5] June 1970 data.
[6] 1970 Annual Average

TABLE 13. - FIVE COUNTY AREA EMPLOYMENT

EMPLOYMENT	ARIZONA						CALIFORNIA						FIVE COUNTY TOTAL	
	Mohave		Yuma		Sub-Total		Imperial		San Bdo-Riverside		Sub-Total			
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
1. Civilian Labor Force	8,600	-	28,175	-	36,775	-	32,100	-	385,400	-	417,500	-	454,275	-
2. Unemployment	525	6.1	1,375	4.9	1,900	5.2	3,000	9.3	22,600	5.9	25,600	6.1	27,500	6.0
3. Total Civilian Employment	8,075	100.0	26,800	100.0	34,875	100.0	29,100	100.0	362,800	100.0	391,900	100.0	426,775	100.0
a) Non-Agric. Wage & Salary	7,000	86.7	15,225	56.8	22,225	63.7	18,300	62.9	296,000	81.6	314,300	80.2	336,525	78.8
1) Manufacturing	600	7.4	1,025	3.8	1,625	4.7	1,550	5.3	53,000	14.6	54,500	13.9	56,175	13.2
2) Mineral Extraction	W	W	W	W	W	W	-	-	W	W	W	W	3,025	0.7
3) Contract Constr.	1,000	12.4	975	3.6	1,975	5.7	500	1.7	14,600	4.0	15,100	3.9	17,075	4.0
4) Transportation, Comm. & Public Utilities	325	4.0	975	3.6	1,300	3.7	1,100	3.8	17,800	4.9	18,900	4.8	20,200	4.7
5) Trade (Wholesale & Retail)	1,400	17.3	4,000	14.9	5,400	15.5	5,800	18.9	66,800	18.4	72,600	18.5	78,000	18.3
6) Finance, Ins. & Real Est.	W	W	W	W	W	W	W	W	W	W	W	W	11,200	2.6
7) Services	1,350	16.7	2,900	10.8	4,250	12.2	2,400	8.3	56,000	15.4	58,400	14.9	62,650	14.7
8) Government (State, Federal & Local)	1,525	18.9	4,825	18.0	6,350	18.2	6,450	23.2	75,400	20.8	81,850	20.9	88,200	20.6
b) All Other Non-Agric. Empl.[1]	925	11.4	2,225	8.3	3,150	8.0	3,200	11.0	45,700	12.6	48,900	12.5	52,050	12.2
c) Agriculture	150	1.9	9,350	34.9	9,500	28.3	7,600	26.1	21,100	5.8	28,700	7.3	38,200	9.0

W=Withheld to avoid disclosure of confidential data.

Source: California Department of Human Resources Development; Arizona Employment Security Commission.

[1] Includes Fishing.

RESOURCE BASED INDUSTRIES:

Agriculture

The agriculture industry varies widely throughout the Five County Area (Table 15). Mohave County represents one extreme with 60.4 percent of the total gross income from farms for 1969 derived from livestock (mainly range livestock), and only 5.7 percent from crops. At the other extreme are Yuma and Imperial Counties with cash receipts from livestock producing 31.5 and 55.4 percent, respectively. Livestock production from these counties is primarily from feedlot operations. Crop production accounted for about 60 percent of the total gross income or nearly $77 million in Yuma County and about 40 percent and over $132 million in Imperial County. The Riverside-San Bernardino-Ontario SMSA, which includes Riverside and San Bernardino Counties, produced about $159 million ($27 million more than Imperial County) in cash receipts from crops. This represents only about 36.7 percent of the total gross income from agriculture. Cash receipts from livestock and livestock products other than poultry and dairy are over $98 million or only about 22.7 percent. In contrast to the other three counties of the Five County Area, these counties have strong poultry and dairy sectors which produce cash receipts of over $76 million and $80 million, respectively. This represents over 46 percent of the gross income for the agriculture industry. Most of the dairy production is from San Bernardino County while poultry production is about evenly distributed between San Bernardino and Riverside Counties.

Total gross income from farms in the Five County Area for 1969 was about 40 percent of the Regional total. The California part of the Five County Area produced 85.4 percent of the total farm income in the Five County Area. Yuma County produced 14.2 percent of the total while Mohave County produced only 0.4 percent. Most (over 60 percent) of this 0.4 percent is derived from range livestock; therefore it becomes evident that the other farm sectors are relatively insignificant in Mohave County.

Table 16 summarizes the principal farm products sold in 1969 (see Table 15 for livestock and livestock products other than dairy and poultry). Considering dairy and poultry as separate sectors within the agricultural industry, the principal farm products, by order of importance, within the Five County Area are: Livestock and livestock products other than dairy and poultry, truck crops and melons, other field crops, fruits and nuts, poultry, dairy, and greenhouse nursery and forest products. Without exception, livestock and livestock productions other than dairy and poultry are the most important farm product in each of the five counties. Truck crops and melons and other field crops are second and third in importance except in San Bernardino and Riverside Counties where they drop to fifth and sixth places, respectively. Poultry and dairy are second and third in importance in the Riverside-San Bernardino County area but are sixth

and seventh in importance in Yuma and Imperial Counties. Although cash receipts in Mohave County are relatively low, dairy and other field crops are second and third in importance with other crops being relatively insignificant. Fruits and nuts are fourth in importance in Yuma, Riverside and San Bernardino Counties but are of only minor importance in Imperial County. There appear to be numerous reasons for this variation in importance of principal farm products between the counties. For example, the category "other field crops" in Imperial and Yuma Counties includes large amounts of hay and grain, apparently in support of the feeder livestock sector. This category appears to be more oriented toward food crops and support of the dairy industry in Riverside and San Bernardino Counties with major crops being potatoes, sweet potatoes, wheat and hay. Dairy and poultry production are concentrated in the more populous areas of Riverside and San Bernardino Counties, apparently because of the need for short time and distance to markets. Crops, most of which can stand longer transportation time and distance, are more evenly distributed throughout the Five County Area. Many other factors, including climate and availability of water, influence where various types of crops are grown.

The livestock sector of the agricultural industry involves the use and disposition of public lands to a greater extent than does the crop sector; therefore it is explored in more depth.

Cash receipts from the livestock industry in Mohave County approximate $2,150,000, most of which is attributable to range livestock operations. The extent of range livestock operations, compared to the total livestock sector, is not nearly as easily observable in the other four counties; however, in contrast to Mohave County it produces only a small percent of the total. Considering the range resource, cash receipts from range livestock are probably greater in Mohave County than any other county within the Five County Area. Range livestock use in Imperial County is considered to be insignificant.

Range and pasture breeding herds within the Five County Area are capable of producing only a small percent of the feedlot demand for stocker and feeder cattle. Therefore this demand must be met by imports from other counties within the Region, other States, and Mexico. Livestock feeding operations have located in the southern part of the Five County Area because of the abundant supply of grain, silage and hay. Most of Yuma County's $40 million livestock industry is dependent upon feeding operations. Stockers and feeders are imported from the eastern part of Arizona and other States to the east; then the majority of the fed cattle are exported to California for immediate slaughter. The county's livestock industry nearly doubled between 1965 and 1969, growing from $22 million to over $40 million. Virtually all of this growth has been in the feedlot sector.[5]

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[5] OBE Regional Economics Information System, Farm Income and Expenditures, July 7, 1971, 1965-1969 data.

The Southern California part of the Region and especially the Los Angeles metropolitan area imports great numbers of cattle for immediate slaughter, and stocker and feeder cattle from Arizona and many other States. About 221,000 head of stockers and feeders and 332,000 head for immediate slaughter were imported from Arizona in 1970.[6/] Cattle for immediate slaughter are shipped to packing houses in the metropolitan areas, while feeders and stockers are shipped to feed lots in dominantly agricultural counties such as Imperial.

Imperial County's feedlot sector is nationally significant, producing about one third of the total livestock slaughtered in California annually. By comparison, California is third in the nation in total livestock slaughter, being surpassed only by Iowa and Texas.[7/]

Imperial County's livestock sector has shown steady growth between 1965 and 1969, increasing from about $145 million to over $186 million, or about $41 million in four years.[8/] Since range livestock is insignificant in this county, the entire growth is attributable to the feedlot sector.

The San Bernardino and Riverside Counties' livestock industry, exclusive of dairy and poultry, declined sharply during the period 1962 to 1965. Since that time growth has been steady, increasing about $22 million from about $76 million to over $98 million (slightly above the 1962 level.[9/] Almost all of this decline and regrowth appears to have been in the feedlot sector. San Bernardino is the only California county within the Five County Area which has a significant range livestock sector and it is comparatively small.

[6/] Calif. Livestock Annual Report 1970, Calif. Crop & Livestock Reporting Service, page 13.

[7/] Calif. Agriculture 1970, Calif. Crop & Livestock Reporting Service.

[8/] OBE Regional Economics Information System, Farm Income and Expenditure, July 7, 1971, 1965-1969 data.

[9/] Same as Footnote 8 except 1962-1969 data.

The following is a summary of the feeder livestock industry during 1970 for Imperial, Riverside and San Bernardino Counties.

TABLE 14. - FED CATTLE MARKETED FROM FEEDLOTS DURING 1970

County	Number of Operating Feedlots	Number of Fed Cattle Marketed
Imperial	51	575,300
Riverside	18	183,000
San Bernardino	5	16,700
Total	74	775,000
California State Total	219	1,966,000
Arizona State Total[1/]	N/A*	860,000

[1/] Data not available by county.

* N/A= Not available

Source: California Crop & Livestock Reporting Service

Both the Region and the Five County Area have experienced substantial shifts in land use during the past decade. Large acreages of farm and rangeland adjacent to metropolitan areas have given way to urban and suburban expansion.

Within the Five County Area the most notable shifts have taken place in western Riverside and San Bernardino Counties. Part of this agricultural loss has been regained by shifting operations eastward into the desert valleys. Yuma, Mohave and Imperial Counties have experienced slight declines in agricultural acreage. Since there are no major metropolitan areas along the Colorado River Valley, there have been no significant shifts of agricultural land to urban and suburban use. Small acreages of agricultural land around the city of Yuma have been transferred to other uses, while the new urban and suburban expansion at Lake Havasu City has been on lands unsuited to agriculture.

Cotton production in Yuma County has shown a steady decline in recent years, while feed grain, hay, vegetable and citrus production have increased. Increases in grain and forage crops appear to be related to the increases in the feedlot sector.

California agriculture in general, as well as that of Imperial, Riverside and San Bernardino Counties, is one of the most diversified in the world, with no one crop dominating the economy. Shifts in production occur on a yearly basis. The industry is experiencing

steady growth with no major shifts between crops. Throughout the Five County Area the feedlot sector has proved to be reasonably profitable and is therefore experiencing a steady growth. In contrast, the range livestock sector is marginal even in some of the most productive parts of the Five County Area; therefore there is a steady decline in both numbers of operators and in the significance of the range livestock sector to the total economy. Other factors which cause the future of the range livestock industry to be uncertain are intensification of general recreation use and buying and selling of rangeland for speculative holding which has greatly inflated the value of the land above its value for livestock production. Continued increases in population, population mobility and leisure time will intensify the conflict with livestock grazing, especially on the public lands. Improvements in technology and management systems may increase production enough to offset these pressures in some areas; however, management systems designed to provide long-range production increases may demand short range decreases.

Range livestock grazing in the Five County Area depends partly upon perennial vegetation and partly on annual vegetation produced on the average of once every five years when adequate spring and summer precipitation occurs. Perennial vegetation provides adequate forage for livestock operations in the higher elevation areas, while annual vegetation may be the only source of forage in some of the low desert areas. Annual forage which is not dependable and occurs in significant amounts only on the average of once in five years, tends to cause the livestock industry within the Five County Area to be unstable. For example, livestock operators must be able to acquire livestock in large numbers when significant annual forage is available and yet remain in business when forage is not available. This instability has resulted in adoption of several types of range livestock operations in the Five County Area.

Irregular sheep use: This type of operation is found in the California low desert region in the vicinity of Imperial Valley and Palo Verde. Grazing is limited to those years when sufficient annual forage makes grazing worthwhile and is usually for only a short period in the spring. The sheep for this use come from stable ranch and farm operations in the Imperial, Palo Verde and San Joaquin Valleys. These ranchers do not usually acquire additional sheep when the annual forage becomes available.

Regular sheep use: This use occurs primarily on the high Mohave Desert area in northwestern San Bernardino County. Use is made nearly every year for a 1½- to 2-month period in the early spring. Herds are then trailed north to summer ranges in the eastern foothills of the Sierra Nevadas. This use of the desert range is a vital part of the year-round operation for the sheep ranchers.

Cow-calf - steer operations: This type of operation occurs in the higher desert areas where perennial vegetation provides enough forage for at least a modest yearlong operation. Most of this use occurs in eastern Yuma County, Mohave County, and eastern San Bernardino County. Usually operators maintain a small cow-calf herd dependent upon the perennial forage supply of the range. During those years when the annual forage supply is abundant, large numbers of cattle are purchased primarily from Mexico and Texas, and grazed for as long as possible before being sold to feedlots in the area.

Steer operations: This type of use occurs primarily on the lower desert areas of Arizona and is very similar to cow-calf - steer operations except that no cow-calf herds are maintained and use occurs only in those years when adequate annual forage is available.

Regular cow-calf operations: These operations occur in the highest and most productive perennial vegetation areas of the Five County Area with use and problems more similar to those found throughout the perennial forage areas of the arid West. Water for adequate livestock distribution is usually a problem and much of the range is marginal for yearlong cow-calf operations; therefore substantial over-grazing has occurred and range conditions have deteriorated.

In summary, livestock grazing constitutes a major use of rangelands for a significant part of the year in the higher more productive sections of the Five County Area, while little or no use occurs in the lower desert areas. Production of annual forage causes range use to fluctuate widely from year to year resulting in a tendency toward instability of the range livestock industry. The feeder livestock industry is the most important sector of the entire agriculture industry and demands considerably more stocker and feeder animals than the range and pasture sector can supply. It should be noted that average annual values for livestock production reflect fluctuations in the feedlot sector, but not the wide annual fluctuations in the range sector.

TABLE 15. - VALUE OF FARM PRODUCTS SOLD IN 1969

Area	Livestock & Livestock Products Other than Poultry & Dairy[1]		All Crops[1]		All Farm Products[2]		
	Amount[3] ($000)	% of All Farm Products	Amount[3] ($000)	% of All Farm Products	Amount ($000)	% of Region	% of Five County
UNITED STATES	31,006,834	53.4	18,790,369	32.3	58,097,696	--	--
ARIZONA	389,418	46.8	292,606	35.2	832,425	37	
SO. CALIFORNIA	377,677	26.2	631,264	43.8	1,439,412	63	
REGION TOTAL	767,095	33.8	923,870	40.7	2,271,837	100	
ARIZONA							
Mohave	2,152	60.4	203	5.7	3,560		0.4
Yuma	40,276	31.5	76,826	60.0	128,014		14.2
Subtotal	42,428	32.2	77,029	58.5	131,574		14.6
CALIFORNIA							
Imperial	186,386	55.4	132,444	39.4	336,122		37.3
San Bernardino - Riverside	98,245	22.7	159,233	36.7	433,676		48.1
Subtotal	284,631	37.0	291,677	37.9	769,798		85.4
FIVE COUNTY TOTAL	327,059	36.3	368,706	40.9	901,372	40	100.0

Source: Regional Economics Information System, Office of Business Economics, July 7, 1971, 1969 data.

[1] The percentages shown do not total 100% because poultry, dairy, government payments and non-monetary income are not included on this table.

[2] Gross receipts from all sources.

[3] Cash receipts.

TABLE 16. - PRINCIPAL FARM PRODUCTS SOLD IN 1969[1]

Cash Receipts in Thousands of Dollars

AREA	LIVESTOCK PRODUCTS		CROPS			
	Dairy	Poultry	Truck Crops & Melons	Fruits & Nuts	Greenhse, Nursery & Forest Products	Other Field Crops
ARIZONA	37,527	6,872	94,668	35,236	11,189	151,513
SO. CALIFORNIA	195,788	168,759	211,559	207,575	105,722	106,408
REGION TOTAL	233,315	175,631	306,227	242,811	116,911	257,921
ARIZONA						
Mohave	180	3	24	6	1	172
Yuma	224	12	38,200	14,344	646	23,636
Subtotal	404	15	38,224	14,350	647	23,808
CALIFORNIA						
Imperial	1,982	34	66,020	1,705	2,135	62,584
San Bernardino - Riverside	76,365	80,085	40,205	71,010	16,848	31,170
Subtotal	78,347	80,119	106,225	72,715	18,983	93,754
FIVE COUNTY TOTAL	78,751	80,134	144,449	87,065	19,630	117,562

Source: Regional Economics Information System, Office of Business Economics, July 7, 1971, 1969 data.

[1] Meat animals other than poultry and dairy are included in Table 15.

Mining

The total value of mineral production in the Five County Area in 1968 was almost $240 million compared to over $1.4 billion for the Region. This represents about 17 percent of the Region's total mineral production. (Table 24, Mineral Resource Production section.) As shown by these figures, mining is an important industry in the Five County Area; however it ranks tenth out of a field of eleven economic sectors in production of personal income or earnings, producing about $31 million or about .8 percent of the total personal income within the area. Personal income is low in comparison to the total value of minerals produced, indicating that a large part of the raw products are exported out of the Five County Area for final processing and use.

Comparable data showing the value of each of the most important minerals are not available for the California and Arizona segments of the Five County Area. California data show the total value of mineral production by county with a listing of the most important minerals in order of value produced (Table 17).

It is evident from this table that most of the mineral production in the California part of the Five County Area is from non-metalliferous minerals except that iron ore is important in Riverside County. San Bernardino County is an important producer of such nationally important products as boron, rare earths, and sodium sulfate. Sand and gravel are of major importance in all three counties.

Copper is by far the most important mineral produced both in the Arizona counties of the Five County Area and the entire State of Arizona. Mohave County produced $24 million worth of copper and Yuma produced over $2 million worth of copper in 1968. Copper mining assumes an even greater importance when it is realized that most of the gold, silver and molybdenum produced in Arizona are by-products of copper mining, milling and smelter operations. When these associated metals are added in, the total value exceeds $27 million for the two counties. Important minerals in Mohave and Yuma Counties include sand and gravel, stone, lead, tungsten concentrate, zinc, feldspar and clays.[10]

Total employment in the mineral extraction sector (Table 13 under Employment section) is about 3,025 people or about .7 percent of the total Five County Area employment. This percentage is slightly less than the national average of .8 percent but is exactly the same as the Region. Employment data by county for both States is withheld in the basic source documents to prevent disclosure of individual company data. Estimates indicate that the mining industry employs about 2,500 people in San Bernardino and Riverside Counties combined, 500 in Mohave

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[10] The Mineral Industry of Arizona, Bureau of Mines Yearbook, Reprint 1968.

County and an insignificant number in Yuma and Imperial Counties (25 or less in each county). Compared to the other economic sectors, mining is the smallest employer in the Five County Area, employing .7 percent of the total work force compared to 2.6 percent for the next smallest sector. This may, however, be misleading since some of the manufacturing concerns depend upon mineral extraction for their existence in the area.

It is not possible to accurately separate employment for the mineral industry into employment by mineral for the Five County Area. As stated above, some minerals are by-products of copper mining; therefore it would not be possible to separate employment by mineral even if exact employment figures were available for copper mining. In addition, disclosure of employment by mineral would require disclosure of individual company data for the majority of the minerals produced in the Five County Area.

Some reasonable judgments regarding employment by mineral can be made, however. Based upon other available information, it is safe to assume that most of the employment in Mohave County is attributable to copper mining. In Riverside and San Bernardino Counties it is estimated that the iron and limestone operations employ about 1100 workers each. Generally those minerals with the highest value of production contribute the most to both employment and personal income.

Total mineral production in the Five County Area has increased steadily over the past few years, although some minerals such as sand and gravel have experienced wide fluctuations from year to year. As mineral prices increase, both exploration and production may be expected to increase. Significant price increases may be expected to cause more rapid changes in technology and modified production methods to process greater volumes of low grade ore.

The political situation in Chile has resulted in the nationalization of American owned copper mine and mill operations. A similar situation exists in Zambia where British holdings have been nationalized, followed by a decline in production. These actions could effectively reduce the world copper supply and lead to future price increases unless pre-nationalization production levels can be maintained. Even if production is maintained, or possibly increased, the free world supply of copper could be reduced depending upon trade agreements with Communist bloc nations. These recent political developments in foreign copper-producing countries seem likely to increase the demand for United States copper production. The mineral resources appendix of the Lower Colorado Region Comprehensive Framework Study indicates that new mine developments and expansion programs will probably increase domestic production of copper through the mid-1970's and possibly improve the nation's balance of payments account.

These foreign political developments appear to have been at least partially responsible for significant increases in exploration activity, especially in the Arizona part of the Region. At present there are an estimated 70 exploration crews in operation compared to perhaps 30, one to two years ago. Although most of the increased exploration activity is occurring outside the Five County Area, some increased activity is evident in Mohave, northern Yuma and eastern San Bernardino Counties.

Arizona contains huge reserves of disseminated (porphyry type) copper deposits, estimated to contain about 7.8 billion tons of ore containing some 50 million tons of copper.[11] Significant deposits of this kind are found in Mohave County with more limited reserves extending into Yuma and eastern San Bernardino Counties. Considering the type of ore available, it appears likely that technological developments will tend toward more profitable means of processing greater volumes of low grade ore. Such developments could include nuclear fracturing and acid leaching of deep ore bodies.

Imperial County has had very limited mineral production in recent years; however, indications are that several large areas of geothermal steam underlie the Coachella-Imperial Valley area of Riverside and Imperial Counties and the Mexicali Valley of northern Mexico. Geothermal wells are now producing electric power in Mexico, and exploration and experimentation have been in progress for several years on private land in the Coachella-Imperial Valley area. In addition to electric power, geothermal wells could possibly produce several different types of minerals and fresh water for irrigation and domestic use, if the highly concentrated salts and brines can be separated from residual geothermal fluids.

Exploratory drilling has been underway for several years to establish the size and quality of a relatively low grade silver deposit in the Calico Mountains of San Bernardino County. The proposed opening of an open pit silver mine at this location depends on the price of silver, including price stability, and the final results from the exploratory drilling.

The rare earth deposit in Mountain Pass in San Bernardino County is one of the largest known deposits of its kind in the world. The mining operation is presently expanding to meet strong demands for use in various manufacturing operations, including stainless steel, color TV tubes, glass, oil refining and others. Additional expansion and exploration for new deposits may be expected as demands for these products increase in the future.

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[11] Lower Colorado River Type I Comprehensive Framework Studies, Appendix VII, P. 27.

Some oil and gas exploration activity is occurring in the southern part of the Five County Area; however the major producing fields of the Region are located in Orange County and the extreme western parts of Riverside and San Bernardino Counties.

Other mineral operations which may develop in the future are the Standard Slag Company's proposal to produce at least one million tons of pelletized iron ore for shipment to Japan and a speculative proposal to attempt to remove the small percentage of iron from the vast Kelso sand dunes of San Bernardino County.

There has been substantial exploration for major metals such as copper, lead and zinc in eastern San Bernardino and Imperial Counties. However, this exploration activity is limited compared to Arizona. There is little indication of exploration activity in the remainder of San Bernardino and Imperial Counties and in Riverside County. New technological advances such as high altitude sensors, coupled with increased demands for U. S. production (especially copper), may however bring about new mineral discoveries within the area.

Sand and gravel are of major importance throughout the Five County Area. Most commercial production is presently coming from private lands adjacent to the metropolitan area of Riverside and San Bernardino Counties. Most production in other sections of the Five County Area is from public lands and is primarily used for highway construction. Recently there has been a slowdown in the demand for mineral materials associated with the construction industries, including sand and gravel, gypsum, clay, limestone, and stone. This slowdown is thought to be temporary, however, since there is a growing need for additional housing and commercial facilities throughout the Region and the Five County Area.

TABLE 17. - VALUE OF MINERAL PRODUCTION AND IMPORTANT MINERALS

	Value		Minerals Produced in Order of Value
	1967 ($000)	1968 ($000)	
ARIZONA[1]			
Mohave	26,682	31,535	Copper, molybdenum, silver, sand and gravel, stone, feldspar, zinc, gold, clays, lead
Yuma	2,869	W	Copper, sand and gravel, stone, silver, lead, tungsten concentrate, zinc
Subtotal	29,551	--	
CALIFORNIA[2]			
Imperial	5,932	4,058	Gypsum, sand and gravel, calcium chloride, lime, clays.
Riverside	72,027	74,416	Iron ore, cement, sand and gravel, stone, clays, natural gas.
San Bernardino	113,356	126,343	Cement, boron, sand and gravel, stone, rare earth mineral, sodium sulfate, sodium carbonate
Subtotal	191,315	204,817	
FIVE COUNTY TOTAL	220,866	--	

W = Withheld to avoid disclosure of confidential data.

[1] U.S. Department of the Interior Minerals Yearbook Preprint, 1968.

[2] Mineral Information Service, April 1970

Outdoor Recreation and Tourism

The "Recreation Industry" is not shown as an individual industry in the Office of Business Economics or other source material which provides economic information by sector. Recreation and tourism actually involve a wide variety of goods and services most of which are accounted for in the "Wholesale and Retail Trade" and "Services" sectors of the economy. This does not imply that the recreation and tourism industries are not recognized. It would be difficult at best, if not impossible, to separate the goods and services purchased for recreation purposes from those purchased for other purposes. Some of the most obvious businesses which would have problems in separating income attributable to recreation from income attributable to other sources, are restaurants, hotels and motels, service stations, and retail stores especially in or near areas of heavy recreation use.

Since economic data are not available for the recreation and tourism sector on a comparable basis with standard economic sectors, data must be extracted from various special use studies and estimates prepared by various government agencies and interested private groups. Usually these studies deal with recreation use in terms of visits or visitor days and gross expenditure per visit or visitor day, within an identified geographic area. These figures are used to determine the flow of money within a given economy.

The recreation and tourism industry may be divided into three major segments. The first is Urban and Suburban Recreation, which includes various indoor activities and outdoor activities such as sports and miscellaneous day use activities. The second is General Tourism, which includes cross country travel and associated sightseeing. The third is Outdoor Recreation of Regional and National Significance, which includes hunting and fishing, water oriented activities and other general land based recreation uses.

Data indicating the economic importance of the entire recreation industry are not available for either the Five County Area or the Region. Valley National Bank estimates for 1969 indicate that tourist expenditures in Arizona were about $530 million. Although similar figures were not found for Southern California, it is certain that expenditures would exceed the Arizona amount by many times. This statement is based on the fact that Southern California has a large population which places a heavy demand on a number of outstanding recreation attractions such as Disneyland, Marineland, and the Pacific beaches.

The Five County Area is somewhat more oriented to national and regional outdoor recreation than is the Region. Major attractions for this type of recreation include Lake Mead, Lake Mohave, Lake Havasu, the remaining free-flowing channel of the Colorado River, the Imperial Sand Dunes, and the expansive Southwest Desert which has a mild and very attractive

winter climate. All of these attractions are easily accessible to the Southern California and other major population centers over several major transportation routes. The most important of these routes are Interstate 8 (U.S. Highway 80) crossing Imperial and southern Yuma Counties; Interstate 10 (U.S. Highway 60) which crosses Riverside and northern Yuma Counties; and Interstate 40 (U.S. Highway 66) which crosses San Bernardino and Mohave Counties. Secondary road systems provide good access throughout the Five County Area from these major east-west transportation routes. Interstate Highway 15 (U.S. Highway 91) and U.S. Highway 93 bring traffic into the area from the north.

These highway systems not only bring large numbers of tourists through the Five County Area on their way to or from the Southern California metropolitan area but they provide fast and efficient access to recreationists in search of both the water and desert oriented activities provided within the Five County Area. Both of these groups provide substantial support for the "Wholesale and Retail Trade" and "Services" sectors of the Five County Area economy. Except for the Riverside-San Bernardino metropolitan area, urban and suburban recreation activity is of minor importance.

The outdoor recreation use within the Five County Area is distinctly influenced by the climate of the area. The intensive water-oriented recreation use on the Salton Sea and the Lower Colorado River system occurs during the summer months. The primary season for this use is from April through October. Almost 85 percent of this use originates from the Southern California metropolitan area, and use is most intense during the three and four-day weekends of Easter, Memorial Day, 4th of July, and Labor Day.

The desert area, paralleling the Colorado River on either side, receives its heaviest use during the season from September through May. Some of the more important uses include dune buggy and other off-road vehicle use, rockhounding, camping, picnicking, and general sightseeing. Except for some off-road vehicle use areas, especially in California, use of the desert in the Five County Area is substantially less intensive than use along the river. A few studies have been made to determine the origin and characteristics of the desert recreation user. From observation and interviews, the majority of the users originate from the Southern California Metropolitan Area.

Another major user group is the older generation retired and semi-retired persons known in the Southwest as "Snowbirds." Most of this group originates from the colder regions of the nation and move into the desert area for a period of two to six months to enjoy the pleasant winter climate. In addition to the mild winter climate, main attractions appear to be rockhounding, beautiful desert scenery and easy access to

good undeveloped long-term camping areas. The winter visitors, although not significantly oriented to water sports, make substantial use of the Lower Colorado River Valley. This makes the Lower Colorado River area a year-round recreation use area with uses differing by season, while the desert is predominantly a fall, winter and spring use area. Extremely high summer temperatures tend to discourage desert recreation use for a period of three to four months (June to mid-September).

The study "Recreation Uses of the Lower Colorado River Valley," made by the University of Southern California Research Institute for Business and Economics, March 1967 to March 1968, provides detailed information on the recreational use of the Lower Colorado River from Davis Dam to the Mexican Border. Since the study was made over a full one year period, it provides information on both the summer or water-oriented visitor, and the winter or primarily desert-oriented visitor who stayed in the Colorado River Valley. The study does not include day use of local residents or non-local residents who stayed in commercial facilities within the towns along the river, nor does it include visitors who remained for over nine months. It was limited to a rather narrow strip along each side of the river; therefore it does not include any information on the desert areas immediately adjacent to the river valley.

The study estimates almost 3 million 24-hour visitor days annually[12/] of which about 48 percent are concentrated on the Parker Strip (town of Parker upriver to Parker Dam). It confirms the fact that the Colorado River Valley is, as stated above, a yearlong recreation use area which appeals primarily to the young active water sports enthusiast during the summer and to those seeking a mild climate, economic shelter and opportunities for sightseeing and fishing during the winter. Use along the Lower Colorado River is about 22 percent of the estimated 21.3 million visitor days of Outdoor Recreation of Regional and National Significance within the Five County Area.[13/]

Hunting is an important part of the outdoor recreation use throughout the Five County Area. Total hunter use is about 719,000 hunter days. This is in addition to the 21.3 million general recreation days for the Five County Area. There is, however, some double counting because the USC study included hunting and fishing while all other estimates separated hunting and fishing from other recreation use.

[12/] Recreation Uses of the Lower Colorado River Valley, University of Southern California, March 1969, p. 1, para. 3.

[13/] Refer to the University of Southern California Study entitled "Recreation Uses of the Lower Colorado River Valley" for detailed information regarding visitor use, visitors per party, type of lodging, expenditure per party, length of stay and other user data.

Upland game bird hunting is the most important hunting use in the Five County Area. Other species which provide significant hunting opportunities are water fowl and desert mule deer. Water fowl hunting is concentrated along the Colorado River and around the Salton Sea, while deer hunting is concentrated in the higher elevations of the north and east part of the Five County Area. Other game animals which are hunted within the Five County Area but provide extremely limited hunting use are elk and antelope found in Mohave County only, desert big horn sheep legally hunted only in Arizona, and rabbits which receive minor hunting pressure because of the distance from population centers.

Most of the Five County Area hunter use originated from population centers outside the area. Hunting use, especially for small game animals and upland game birds, appears to diminish more rapidly than does recreation use as the distance from population centers increases.

Forestry and Vegetative Products

The Forestry and Vegetative Product industry is insignificant to the Five County Area. By comparison, the industry produces in excess of $70 million to the Region's economy, with almost 100 percent coming from the forest lands of Arizona.[14/] Minor amounts of woodland products and desert vegetation are produced within the Five County Area. Some of these are: Juniper posts, firewood, ornamental plant material (both dead and alive), and yucca for use as a fertilizer carrier. Some of the production is known to be harvested without permission from the landowner. Information regarding the value of production and contribution to the area economy is not readily available.

OTHER INDUSTRIES:

The primary resource based industries are covered above. Unfortunately some (i.e., recreation, forestry and vegetative products) are not separate economic sectors but are part of other designated sectors; therefore good secondary data are not readily available from the usual basic sources. The other major industries of the Five County Area and Region which depend to some extent on the resource based industries are: Manufacturing, contract construction, transportation, communication and public utilities, trade, finance, insurance and real estate, services and government.

[14/] Arizona Statistical Review, Valley National Bank, 1970, p. 20.

Considering earnings, manufacturing is the most important sector in the Five County Area. Local government is a close second. If both local and Federal government are considered as one sector, "government" is by far the most important sector. Within the private sector group, wholesale and retail trade, and services follow manufacturing as economic sectors of major importance (Table 10). The importance of individual sectors varies substantially between counties within the Five County Area (refer to Income section for detail).

IV. PUBLIC LAND RESOURCE PRODUCTS AND LAND USE

LIVESTOCK FORAGE:

Dependence of Initial Users on Public Land Forage

BLM permittees in the Five County Area depend heavily on the public lands for their total livestock forage supply (Table 18). About 44 percent of the permittees depend on public lands for 75 to 100 percent, and 11 percent depend on public lands for 50 to 75 percent of their total forage supply. In other words, 55 percent of all BLM permittees depend on public land forage for over 50 percent of their total supply. About 43 percent are less than 50 percent dependent, while 35 percent are less than 25 percent dependent.

Yuma and Mohave County permittees are substantially more dependent on public land forage than are the California permittees. About 79 percent of the permittees in Arizona depend on public lands for over 50 percent of their forage supply while in California only 23 percent are over 50 percent dependent.

These dependency figures (Table 18) reflect only the permittee dependency on public lands for the total forage supply and not his dependency on public lands for total income. Permittee dependency on ranching for a livelihood is not available; however, it is estimated that only about one out of four are actually dependent upon the ranching operation for a significant part of their livelihood. Very few depend upon their ranching operation for 100 percent of their total income. This fact indicates that initial users are actually much less dependent on public lands than is indicated by the percent of the total forage supplied by these lands.

Dependence of the Livestock Industry on Public Land Forage

The dependence of the livestock industry on forage from public lands is determined by comparing the total cash receipts from livestock (excluding poultry) to the total cash receipts generated by livestock use of the public lands (Table 19). No attempt is made to compare production from public lands to the range livestock part of the livestock sector. The contribution to the total livestock industry is considered to be much more relevant.

The livestock industry of the Five County Area produces about 47.5 percent of total cash receipts to the agricultural sector. This varies from a low of 34.5 percent in Yuma County to a high of almost 92 percent in Mohave County (Table 19). Livestock produced 58.7 percent and 42.2 percent of the agricultural sector cash receipts in Imperial County and the Riverside-San Bernardino-Ontario SMSA, respectively. Mohave County livestock production is almost

exclusively from range cattle, while feeder cattle account for most of the production in the other four counties. Imperial County has almost no range livestock production.

As previously discussed, range forage production varies widely from year to year. Therefore animal unit month production from public lands is shown as average annual production rather than the amount produced in 1970. Forage production from public lands in Mohave County is substantially greater than that from the other four counties. In fact, there is no domestic livestock grazing use on public lands in Imperial County--a reflection of the livestock industry's total independence from the public lands in this county.

Cash receipts from livestock produced on the public lands in the Five County Area exceed $3.3 million. This represents only about 0.8 percent of the total cash receipts produced by the livestock industry. The Mohave County livestock industry is dependent on public lands for almost $1.3 million in cash receipts or about 55.4 percent of the total. In contrast, industry dependence on public lands in Yuma County and the Riverside-San Bernardino-Ontario SMSA is 2.3 percent and 0.6 percent, respectively. All counties except Imperial are, however, reasonably comparable in the actual amount of cash receipts produced from livestock using public lands. The very low dependence of the livestock industry on production from public lands is another reflection of the fact that the livestock industry in all counties except Mohave is made up primarily of feedlot operations. Feedlot operations in the area are growing, while range livestock grazing in the Five County Area is actually declining. Dependence of the livestock industry on total range livestock and on public land produced range livestock is therefore declining.

Adjustments in grazing use on public lands will therefore have relatively little impact upon the livestock industry of the Five County Area except in Mohave County where the industry depends on public lands for over 55 percent of its total production. It should be realized, however, that the effect of such adjustments on the range livestock segment of the livestock industry would be substantially greater. Some of the range livestock operators--especially in Yuma, Riverside and San Bernardino Counties--have insulated themselves against major adjustments in grazing use on public lands by diversifying into combination range and feedlot operations.

Community Dependence on Livestock Production

The dependence of local communities on livestock production and livestock production attributable to the public lands is based on the contribution of these sectors to the communities' total personal income. A major assumption made in developing community dependence

is that "the percent of total livestock earnings from public lands is the same as the percent of total cash receipts from public lands," (Table 20). With this assumption, percentages from Table 19 were used to calculate total dollar earnings from the livestock industry and total dollar earnings from livestock using public lands. These dollar earnings were then multiplied by the agriculture income multiplier of 1.716 to determine the total earnings in the community attributable to the livestock sector and to livestock production from public lands. (See Introduction section for a description of the multiplier concept.) These earnings attributable to the livestock sector and to livestock production from public lands were then compared to total personal income to derive the percent community dependence on each. (There are only minor differences between OBE total personal income figures and OBE earnings by broad industrial sector. Therefore, for comparison purposes in deriving community dependence, they are considered to be synonymous.)

The livestock industry is a major contributor to total personal income in the Five County Area, providing slightly over 6 percent. By comparison, earnings attributable to public lands from livestock production are insignificant, producing only .04 percent of the communities' total personal income. The total dollar earnings attributable to livestock production from the public lands is $1.7 million. Considering the major industrial economy of the metropolitan area in western Riverside and San Bernardino Counties, the public land contribution is somewhat more significant to the rural communities than is indicated by the dependence of .04 percent.

Community dependence for the individual community impact areas varies widely from the Five County Area total. Mohave County, on the one extreme, derives about 1.1 percent of its total personal income from the livestock industry and about 0.6 percent from livestock production on public lands. On the other extreme, Imperial County derives 41.7 percent of its total personal income from the livestock industry while the public lands contribute nothing. Yuma County is substantially above the Five County Area total, depending on the livestock industry for 15.1 percent and on public land livestock production for 0.35 percent of its total personal income. The Riverside-San Bernardino community impact area is substantially below the Five County average with dependency levels of 2.8 percent and 0.02 percent on the livestock industry and public land livestock production, respectively. These dependency figures are significantly influenced by the major industrial economy in the western part of the CIA.

In summary, the contribution of livestock production from public lands is relatively insignificant to the total economy of the Five County Area or to any given community impact area.

Benchmark Projections - 1980

Projections of feed requirements to 1980 are estimated for the Five County Area only, without individual projections for each county or community impact area. No projections have been made by other agencies or group specifically for the Five County Area, and it is beyond the scope of this economic supplement to prepare original projections. Therefore, several reasonably comparable secondary sources were considered.

Projections found in Appendix IV, Economic Base and Projections, of the "Lower Colorado Region Comprehensive Framework Study" and of the "California Region Comprehensive Framework Study" were used as the basis for a Five County Area projected increase in feed requirements. These projections are a modification of "Office of Business Economics and Economic Research Service" projections and are known as "Modified OBERS" projections. After comparison of these projections to the Five County Area situation, a projection of 40 percent increase in feed requirement between 1970 and 1980 was estimated. The projections used as a basis for the Five County Area projection considered not only past trends but also expected increases in population and expected increases in per capita red meat consumption. (The U.S. per capita beef consumption in 1961 was about 85 pounds. The projected per capita consumption for 1980 is about 112 pounds.)

The present annual average production from public lands is 393,400 AUM's. Based on a 40 percent increase, the benchmark projection for 1980 is 550,800 AUM's, or an increase of 157,400 AUM's. This projection is only an indication of the production level which would have to attain on public lands by 1980 in order to maintain the present level of importance to the total livestock industry. It is not a target production level.

These projections raise an important question. Can the public lands maintain their present level of importance to the livestock industry? Most likely not. The potential for range rehabilitation through brush control, seeding, etc., is very limited throughout the Five County Area. Therefore only minor increases may be expected from this means. Some increase in forage production is possible through better management practices; however, long term improvement may require some short term decreases in use to allow depleted areas to recover. The range resources of the Five County Area do not have the potential for major increases in forage production through either natural or artificial means short of irrigation and fertilization. Projections for the range livestock part of the livestock sector indicate that range livestock numbers are expected to increase about 3 to 4 percent during the period 1965 to 1980.[15] Based on this projection, it is expected that demand for range livestock forage will increase only slightly during the 1970 decade.

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[15] Lower Colorado Comprehensive Framework Study, Appendix IV, p. IV-60, Lower Main Stem Subregion data for range cattle.

Based on the livestock industry projections and public land capability to produce, it appears almost certain that the livestock industry will become less dependent upon forage from public lands in the future than at present. The initial users (BLM permittees) may continue to maintain the present dependency level on public land forage.

The insignificance of public land forage production to the livestock industry and to the local community, along with the projection that the contribution from public lands will become less significant in the future, make expenditure of public funds for the express purpose of increasing livestock forage production on the marginal range lands of the Five County Area seriously questionable.

TABLE 18. - INITIAL USER DEPENDENCE ON BLM FORAGE

AREA	DEPENDENCY CLASS									
	0 - 24%		25 - 49%		50 - 74%		75 - 100%		Unknown	
	Number	% Total	Number	% Total	Number	% Total	Number	% Total	Number	% Total
ARIZONA										
Mohave	8	10	5	6	20	26	42	54	3	4
Yuma	6	13	3	6	2	4	34	72	2	4
Subtotal	14	11	8	6	22	18	76	61	5	4
CALIFORNIA										
Imperial	0	0	0	0	0	0	0	0	0	0
Riverside - San Bernardino	61	66	10	11	2	2	20	21	0	0
Subtotal	61	66	10	11	2	2	20	21	0	0
TOTAL	75	35	18	8	24	11	96	44	5	2

Totals may vary from other sources because adjustments were made for permittees holding permits in more than one county and for those holding more than one permit or lease.

Source: BLM Phoenix District Office and Riverside District Office files.

TABLE 19. - LIVESTOCK INDUSTRY DEPENDENCE ON BLM RESOURCE

	Total Farm Cash Receipts[1] ($000	Livestock Cash Receipts[2] ($000	%	BLM AUM's[3]	BLM Land Cash Receipts[4] ($000)	5/
ARIZONA	726,423	426,945	58.8	869,450	7,390	1.7
SO. CALIFORNIA	1,373,488	573,465	41.8	150,000	1,275	0.2
REGION TOTAL	2,099,911	1,000,410	47.6	1,019,450	8,665	0.9
ARIZONA						
Mohave	2,538	2,332	91.9	152,200	1,294	55.4
Yuma	117,338	40,500	34.5	111,200	945	2.3
Subtotal	119,876	42,832	35.7	263,400	2,239	5.2
CALIFORNIA						
Imperial	320,846	188,368	58.7	00	00	0
Riverside - San Bernardino	413,928	174,610	42.2	130,000	1,105	0.6
Subtotal	734,774	362,978	49.4	130,000	1,105	0.3
TOTAL	854,650	405,810	47.5	393,400	3,344	0.8

Note: Due to rounding, data does not necessarily add.

[1] Sum of livestock and crops cash receipts OBE 1969.

[2] Meat animal and dairy cash receipts OBE 1969.

[3] Average annual production in Animal Unit Months. - AUM = The amount of forage required to feed one cow or equivalent (five sheep) for one month.

[4] BLM AUM's X $8.50 which is cash receipts from an AUM of Range Livestock use, calculated from OBE data and total AUM's in Mohave County.

[5] Percent of Cash Receipts attributable to BLM-Administered Public Lands (BLM land cash receipts ÷ Livestock cash receipts)

TABLE 20. - COMMUNITY DEPENDENCE ON LIVESTOCK PRODUCTION

($000)

	Total Personal Income	Total Farm Earnings[1]	%[2]	%[3]	Total Livestock Earnings	%[4]	Earnings from BLM Lands	Earnings attributable to			
								All Livestock[5]	%[6]	BLM Lands[5]	%[6]
ARIZONA											
Mohave	61,713	414	0.7	91.9	380	55.4	211	652	1.1	362	0.59
Yuma	217,217	55,528	25.5	34.5	19,157	2.3	441	32,873	15.1	757	0.35
Subtotal	278,930	55,942	20.1	--	19,537	--	652	33,526	12.0	1,119	0.40
CALIFORNIA											
Imperial	283,200	117,132	36.1	58.7	68,756	0	0	117,985	41.7	0	0
Riverside-San Bernardino	3,632,500	140,938	4.0	42.2	59,476	0.6	357	102,061	2.8	613	0.02
Subtotal	3,915,700	258,070	6.6	--	128,232	--	357	220,046	5.6	613	0.02
TOTAL	4,194,630	314,012	7.5	--	147,769	--	1,009	253,572	6.1	1,732	0.04

[1] OBE Table 5.00 1969.

[2] Farm % of total Personal Income

[3] % Farm Earnings attributable to Livestock (meat animals and dairy). This % is from Livestock Industry Dependency by Cash Receipts (Table 19).

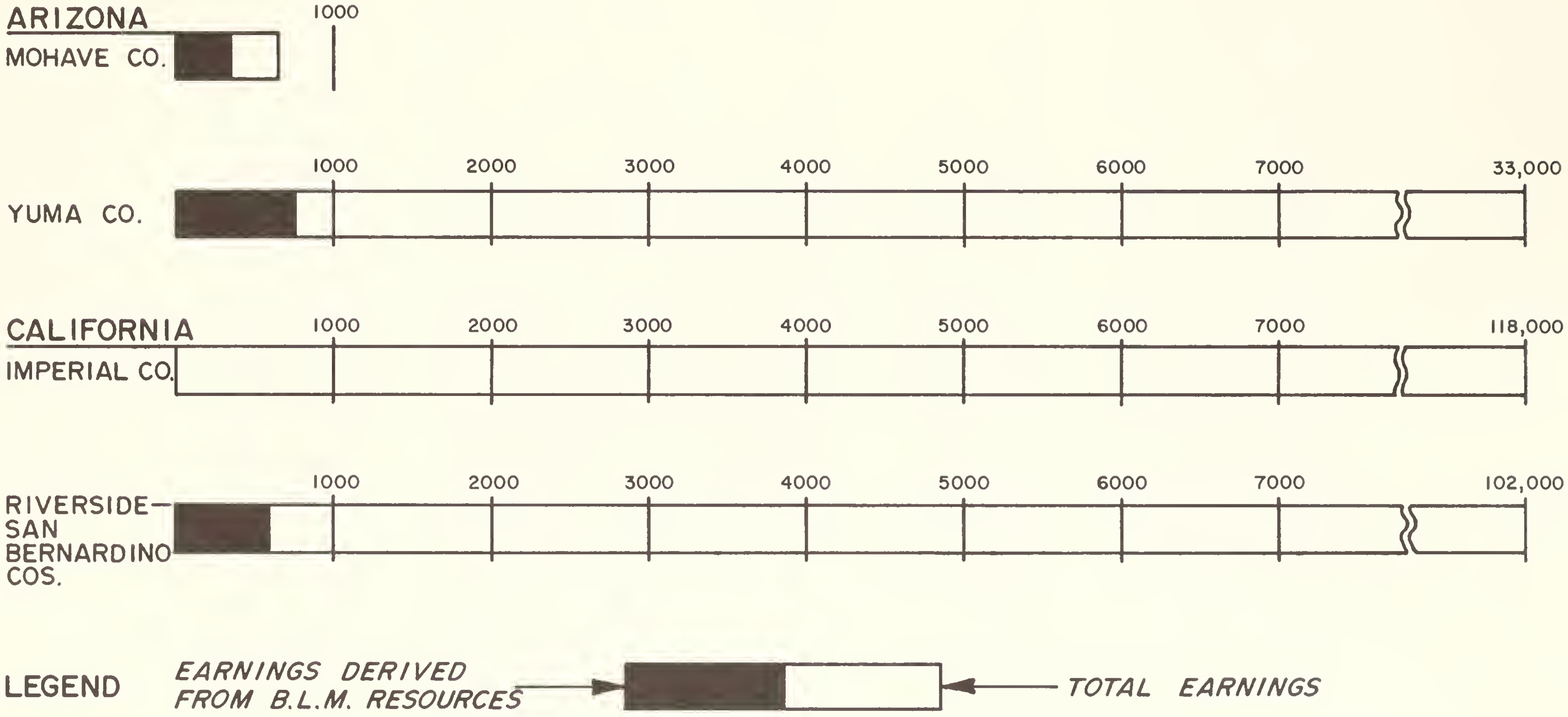
[4] % Livestock Earnings attributable to BLM. This % is from Livestock Industry Dependency by Cash Receipts (Table 19).

[5] Earnings times agriculture income multiplier of 1.716, as calculated from DES guidelines.

[6] Community dependence

FIGURE 5

EARNINGS ATTRIBUTABLE TO THE LIVESTOCK INDUSTRY
FIVE COUNTY AREA
($000)



RECREATION:

Hunting

Dependence of Hunting on the Public Lands: Estimates of total hunter use and hunting on public lands were obtained from State Game and Fish Department, Bureau of Sport Fisheries and Wildlife, BLM and other agency data. The total hunting use for the Five County Area is estimated to be about 718,700 hunter days (1968 data). About 404,200 days of this total were spent on public lands. The major big game species hunted in the area is deer, with some hunting of desert big horn sheep in the Arizona counties. The major small game species are dove, quail, and rabbits.

Non-consumptive uses of wildlife, such as bird watching, nature study, photography, general observation, etc., are considered to be a part of general recreation. The California Desert Study indicates that this type of use is greater than hunting (consumptive use). The value of the wildlife resource is, therefore, substantially greater than the hunting data given in this section indicate. These values are included as a part of general recreation values.

Total expenditure for hunting in the Five County Area is based upon an estimated average daily expenditure in the local area of $1.75. The total expenditure for hunting in the Five County Area for 1968 was almost $1.3 million, while expenditure for hunting on public lands was about $707,000, or 56 percent of the total (Table 21). Dependence on public lands for hunting by county varies from as low as about 36 percent for Imperial County to a high of about 79 percent in San Bernardino County. Based on the available data, the California counties are substantially more dependent on public lands for hunting use than are the Arizona counties (59 percent as compared with 47 percent). These dependency ratios are much higher than any other use dependence on public lands. They represent initial user dependence as well as industry dependence. Both the initial users and the industry would be significantly affected by any decisions which would either beneficially or adversely affect the total amount of hunting available in the Five County Area.

A review of studies made to determine the value of hunting to an economy indicates that while expenditures per day are often quite high, local expenditures in areas distant from population centers such as most of the Five County Area are very comparable to other forms of recreation. Therefore, the local expenditure figure of $1.75 per hunter day (the same as the expenditure per visitor day from the USC study) is used.

Community Dependence on Hunting: The community dependence on hunting is derived by comparing the earnings attributable to all hunting and to hunting on public lands with the total personal income for the community. The earnings attributable to hunting and to hunting on public lands are based on the total expenditure estimated for the local community times the recreation income multiplier of 1.505 (Footnote 2, Table 21).

Hunting in the Five County Area generates almost $1.9 million in earnings (total personal income). This is 0.05 percent of the Five County Area total personal income. Earnings generated from hunting on public lands are about $1.1 million, or 0.03 percent of the Five County Area total personal income. It is evident from these dependency ratios that hunting is insignificant to the total economy of the Five County Area. Dependency ratios for Mohave, Yuma and Imperial Counties are substantially higher than those for the Five County Area (Table 21). Even with these higher ratios, hunting is still of only minor significance to the economy of these communities. The community dependency ratios for Riverside and San Bernardino Counties would probably be similar to those of the other three counties if the effect of the metropolitan industrial complex could be eliminated. Although the contribution from public lands to the total community economy from hunting is insignificant, it should be remembered that public lands provide the majority of the total hunting use within the Five County Area. This use is most important to many individuals and it provides local businesses and individuals with about $1.3 million in earnings which they would otherwise not receive.

Benchmark Projections - 1980: No information has been found from which to develop a benchmark projection for hunting use within the Five County Area. Some information which tends to indicate the situation by 1980 is, however, available. The California Fish and Wildlife Plan estimates that about 40,000 hunters took about 530,000 quail in 1963, and projected the 1980 hunting pressure to be about 80,000 hunters with a projected quail harvest of about one million. No demand projections for other game species are available for the California desert area. However, the limited habitat and numbers of game animals (especially big game) are expected to limit the demand for hunting in this area.

Projections of hunting demand for either big game or small game are not available for Mohave and Yuma Counties, Arizona. Beginning with the 1971 hunting season, all big game hunting in Arizona is by permit only, including desert mule deer. Hunting use for big game is therefore administratively controlled. Actual demand for the 1971 deer season was, however, substantially less than the number of permits available (supply) according to the Arizona Game and Fish Department. Only one year of supply versus demand data is available; therefore there is not enough information from which to project the expected 1980 demand.

Some improvement may be made in the upland game bird and small game habitat by development of additional waters throughout the Five County Area. Bird populations, however, depend upon a permanent food supply which in turn depends on adequate precipitation. Annual rainfall throughout the Five County Area varies widely from year to year; therefore the food supply is not necessarily dependable from year to year. As indicated by the California Fish and Wildlife Plan, demand is expected to double between 1963 and 1980. Current bird populations are thought to be adequate to meet demand under normal bag limits during dry years when food supply and therefore bird population are low. Significant increases in demand, without any increase in supply of certain game species, can be met by reducing bag limits, restrictive seasons and other administrative arrangements. Hunters would probably have to participate at a lower success ratio; however many more could enjoy the hunting experience within the production limit of the game species.

The public lands are expected to continue to produce the same share of the total as at present, provided some of the better habitat along the Colorado River is not severaly damaged or destroyed by channelization, other facility development, and excessive people use in key habitat areas.

Waterfowl hunting is not expected to change significantly in the area unless major habitat improvements or degradation and loss, primarily on lands managed by other Federal and state agencies, occur.

TABLE 21. - INDUSTRY AND COMMUNITY DEPENDENCE ON HUNTING

FIVE COUNTY AREA - 1968-69

	Hunter Days		Industry Dependence (Value of Expenditures)			Community Dependence			
	All Sources	BLM	All Sources[1]	BLM Lands[1]		All Sources		BLM Lands	
	(Number)	(Number)	Value $	Value $	%	Earnings[2]	%[3]	Earnings[2]	%[3]
ARIZONA									
Mohave	54,700	31,400	95,725	54,950	57.40	144,066	0.23	82,700	0.13
Yuma	102,000	42,100	178,500	73,675	41.27	268,643	0.12	110,881	0.05
Subtotal	156,700	73,500	274,225	128,625	46.90	412,709	0.15	193,581	0.07
CALIFORNIA									
Imperial	233,100	84,200	407,925	147,350	36.12	613,927	0.27	221,762	0.08
Riverside	166,100	117,700	290,675	205,975	70.86	437,466	0.03	309,992	0.02
San Bernardino	162,800	128,800	284,900	225,400	79.12	428,775	0.02	339,227	0.02
Subtotal	562,000	330,700	983,500	578,725	58.84	1,480,168	0.04	870,981	0.02
TOTAL	718,700	404,200	1,257,725	707,350	56.24	1,892,877	0.05	1,064,562	0.03

Source: Estimates by county, state and federal agencies.

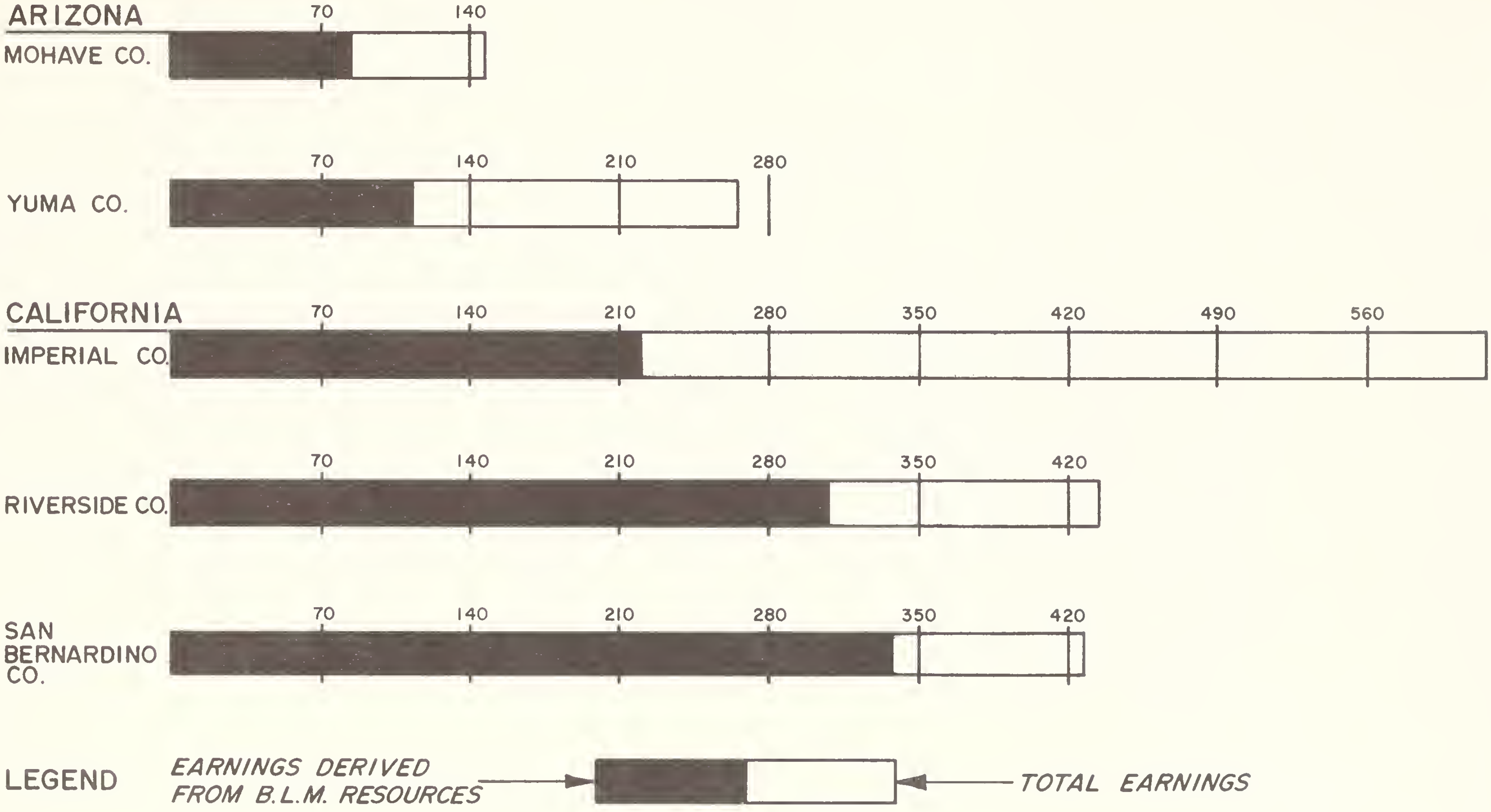
[1] Hunter days multiplied by $1.75, the average daily expenditure in the local area.

[2] Value of expenditure times a recreation income multiplier of 1.505, calculated from DES guidelines.

[3] Hunting related earnings as a percent of total personal income.

FIGURE 6

EARNINGS ATTRIBUTABLE TO HUNTING
FIVE COUNTY AREA
($000)



RECREATION:

General Recreation Use

General outdoor recreation (including non-consumptive use of wildlife) in the Five County Area can be conveniently broken into two basic types. These are (1) Water-oriented recreation concentrated primarily along the Lower Colorado River and around the Salton Sea, and (2) Desert-oriented recreation which covers most of the Five County Area to some extent but is concentrated in the lower desert regions during the winter months. The data source for water-oriented recreation use along the Lower Colorado River is "Recreational Uses of the Lower Colorado River Valley," by R. R. Mead and J. W. Ehrenreich, University of Southern California Research Institute for Business and Economics. The source of data for recreation use on the remainder of the Five County Area is estimated visitor use made by Federal, state and local government agencies involved in recreation management and use. Since separate data are available on the Lower Colorado River, recreation industry dependence, community dependence, and benchmark projections are prepared for the river area by county as well as for the entire Five County Area by county.

Dependence of the Recreation Industry on Public Lands: The Five County Area recreation industry dependence on public lands is based on the value of recreation expenditures in the local area. These values are derived by multiplying recreation days times an average expenditure per recreation day of $1.75, as calculated from the U.S.C. study.[16] (Table 22 and Footnote 3 to Table 22.)

Local expenditure for recreation in the Five County Area is about $37.3 million annually, while expenditure for recreation on public lands is about $13.8 million annually. Recreation industry dependence on public lands is, therefore, about 37 percent. (This percent applies equally to the recreation day data found in columns 1 and 2 of Table 22.)

Recreation industry dependence on public lands varies widely between the counties within the Five County Area. San Bernardino County has by far the largest amount of recreation use of any county and depends on public lands for 42.3 percent of the 14.6 million visitor day total. Riverside County, which is second with 9.3 million visitor days, depends on public lands for only 1.4 million, or 15.3 percent

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[16] Clawson, Marion, Private and Public Provisions of Outdoor Recreation Opportunity, ORRRC Study Report 24, 1962, U.S. Gov. Printing Office. Average daily expenditure given in this document correlates closely with USC study.

of the total. Mohave County is third in total importance but the recreation industry is only 9.4 percent dependent on public lands. Yuma and Imperial Counties generate the least amount of total recreation expenditures but are 55.5 and 88.3 percent dependent on public lands, respectively (Table 22).

The public lands are considered to be of major significance to the recreation industry in the Five County Area and of each individual county as well. Public land management decisions that would significantly change recreation use on public lands would have a major effect on the entire Five County Area recreation industry. This would be felt not only by the initial recreation user but also by the many retail trade and service type businesses which depend on recreation expenditure for much of their total earnings. Recreation use on public lands generates more total expenditure or gross flow of money than any of the other resources or uses on public lands.

The recreation industry immediately adjacent to the Colorado River is dependent on public lands along the river for 30.5 percent of the total recreation use. This is substantially less than the level of dependence for the Five County Area (Table 23). In comparison, the San Bernardino County industry dependence is 53 percent; Imperial County is 35.3 percent; Yuma County is 27.9 percent; Riverside County is 6.2 percent and Mohave County is 2.4 percent. The level of dependence in Mohave and Riverside is low because of the very small amount of public land adjacent to the river.

Industry dependence on public lands along the California side of the river is 45.9 percent compared to only 18.7 percent along the Arizona side. The public lands are less significant to the recreation industry along the Colorado River than in the Five County Area; however, they are considered to be of major importance to the recreation industry in the communities along the river. Many recreation oriented service and retail businesses are even more dependent on public land based recreation than is indicated by the industry dependency ratios given in Table 23. Those most heavily dependent on public land based recreation are located on public lands and are authorized by concession leases or annual permits.

Community Dependence on Outdoor Recreation: General outdoor recreation community dependency ratios are based on earnings attributable to outdoor recreation use as a percent of total personal income for a given community impact area or county. Earnings attributable to recreation are calculated from total recreation expenditures, using the recreation income multiplier of 1.505 (expenditure times multiplier equal earnings attributable to recreation). The multiplier concept is explained in the Introduction section of this supplement.

General outdoor recreation is an important producer of personal income (earnings) in the Five County Area and in each of the individual counties. It generates over $56 million in earnings to the Five County Area economy, while recreation activities on public land generate about $20.8 million. This represents a Five County Area dependence on recreation of 1.3 percent for all outdoor recreation activity and 0.5 percent for outdoor recreation activity on public lands. Since there are numerous economic activities in the Five County Area, any sector which produces as much as 1 percent of the total personal income is considered to be of major importance. The 0.5 percent dependence on public land recreation activity is considered to be highly significant.

Recreation is more important to Mohave County than to the other counties of the Five County Area in that it generates 12.4 percent of the county's total personal income. Public land based recreation generates 1.2 percent of the county's total personal income. Yuma County is more dependent on public land based recreation (1.8 percent) than are any of the other counties. Imperial County is a close second, with almost 1.7 percent. Earnings from total outdoor recreation and from public land outdoor recreation are highly significant even in Riverside and San Bernardino Counties where the majority of the total personal income is generated in the industrial complex associated with the Riverside-San Bernardino-Ontario metropolitan area. Recreation use tends to draw expenditure of money from the urban into the rural communities. Many of these rural communities are substantially more dependent upon outdoor recreation activity than is indicated by the community dependency ratios in Table 22.

Community dependence on recreation use along the Lower Colorado River is substantially less than that for the Five County Area; nevertheless it is an important source of income to the entire area. The dependency ratios shown in Table 23 are the dependence of each individual county and the entire Five County Area upon recreation earnings along the Lower Colorado River. Data from which to calculate dependence of local communities along the Lower Colorado River upon recreation use adjacent to the river are not available. The total earnings attributable to Lower Colorado River recreation use are about $12.4 million, or .3 percent of the Five County Area total personal income. By comparison, earnings attributable to public lands are about $3.8 million or 0.1 percent of total personal income. Use of public lands adjacent to the river is of major significance in Yuma County, producing about 0.7 percent of the county's total personal income. Both Mohave and Yuma Counties have a relatively high dependence (6.4 and 2.5 percent respectively) upon Lower Colorado River recreation use (Table 23). Several of the smaller communities and many of the local businesses depend heavily upon this use for their annual income.

Benchmark Projections - 1980: The National Park Service projects an increase of 6 percent per year during 1970 to 1979, for the Lake Mead National Recreation Area. This projection is supported by the Lower Colorado River Region Comprehensive Framework Study projection of 5.8 percent annually for extensive outdoor recreation areas. The Lake Mead National Recreation Area projection is a local projection, and use of the recreation area is at least partially similar to that found in the Five County Area. The 6 percent per year projection, or a 66 percent increase for the period 1969 through 1980, is therefore used.[17/] Based on this percentage, the demand for outdoor recreation use may be expected to increase from the present 21.3 million recreation days to over 35.3 million days by 1980. In order to maintain their 37 percent of the total recreation use, the public lands would have to supply about 13.1 million recreation days by 1980. This is an increase of about 5.2 million days during the 11-year projection period. The capability of the public lands to meet this increase in recreation demand depends on several factors, including the type of use, the level of development, the level of surface disturbance which can be tolerated without irreparable damage to the resource, and others. Serious resource deterioration would probably occur under this projected level of use without intensive management and facility development. According to estimates made in the California Desert Study, public lands should be able to sustain substantially more use than the projected demand, with good management and adequate development.

Recreation use along the Lower Colorado River Valley is projected to increase from about 4.7 million in 1969 to about 7.8 million by 1980, using the 66 percent projected increase in demand. In order for the public lands to maintain their 30.5 percent of the total use along the river, use would have to increase from the present 1.4 million visitor days to almost 2.4 million--an increase of almost 1 million visitor days. Resource deterioration is occuring at the present time in some of the more intensive use areas along the river. Therefore, in their present condition public lands along the river cannot meet this projected increase in demand without serious damage to a resource which is the recreation attraction. Public land resources may be capable of meeting this projected demand only if intensive management and adequate facilities are provided for. The amount of use which can be supported by the public lands depends upon the type of use demanded by the public and allowed within the area.

[17/] This projection generally exceeds the 1965-1980 National Participation Rate Projections published in "Outdoor Recreation Trends," USDI, Bureau of Outdoor Recreation, April 1967.

Concession Operations: Visitor use data for the concessioners and permittees providing recreation goods and services along the Colorado River are included in Tables 22 and 23. Specific economic information relating to the economic feasibility of these operations and their effect upon the local economy would be most helpful in the decision making process; however, primary data collection which is beyond the scope of this economic supplement would be required. An intensive economic study of these concession operations to determing the public need for concession type facilities and the feasibility of operating such facilities with an acceptable margin of profit, would be helpful and may prove to be necessary before final MFP decisions can be made.

TABLE 22. - INDUSTRY AND COMMUNITY DEPENDENCE ON OUTDOOR RECREATION USE

FIVE COUNTY AREA[1]
1967-1969

	Recreation Days[2]		Industry Dependence (Value of Expenditures)[3]			Community Dependence (Value to Area)[4]			
	All Sources (Number)	BLM (Number)	All Sources Value $	BLM Lands		All Sources		BLM Lands	
				Value $	%[5]	Earnings $	%[6]	Earnings $	%[6]
ARIZONA									
Mohave	2,911,100	272,500	5,094,400	476,900	9.4	7,667,072	12.4	717,735	1.2
Yuma	2,705,800	1,475,600	4,735,200	2,582,300	54.5	7,126,476	3.3	3,886,362	1.8
Subtotal	5,616,900	1,748,100	9,829,600	3,059,200	31.1	14,793,548	5.3	4,604,096	1.7
CALIFORNIA									
Imperial	2,035,000	1,796,400	3,561,300	3,143,700	88.3	5,359,756	1.89	4,731,268	1.67
Riverside	5,296,800	812,800	9,269,400	1,422,400	15.3	13,950,447	0.94	2,140,712	0.14
San Bernardino	8,338,500	3,524,300	14,592,400	6,167,500	42.3	21,961,562	1.02	9,282,088	0.43
Subtotal	15,670,900	6,133,500	27,423,100	10,733,600	39.1	41,271,765	1.05	16,154,068	0.41
TOTAL	21,287,400	7,881,600	37,252,700	13,792,800	37.0	56,065,313	1.34	20,758,164	0.49

[1] Source: Federal, state, county and city agencies' reports and estimates for 1969, and USC Study 1967-68.

[2] Recreation days as defined in Senate Document 97 -- Data from various sources were received in visits and 12-hour visitor days, both of which fall within the recreation day as defined (24-hour period or reasonable part thereof.

[3] Recreation days times an average expenditure of $1.75 as calculated from USC study.

[4] Value of expenditures times a recreation income multiplier of 1.505 as calculated from DES guidelines.

[5] BLM as a percent of all sources; applies equally to recreation days.

[6] Recreation related income as a percent of total personal income.

TABLE 23. - INDUSTRY AND COMMUNITY DEPENDENCE ON OUTDOOR RECREATION USE[1]

LOWER COLORADO RIVER - 1967

	Visitor Days[2]		Industry Dependence (Value of Expenditures)[3]			Community Dependence (Value to Area)[4]			
	All Sources (Number)	BLM (Number)	All Sources Value $	BLM Lands		All Sources		BLM Lands	
				Value $	%[5]	Earnings $	%[6]	Earnings $	%[6]
ARIZONA									
Mohave	954,800	22,500	1,670,900	39,400	2.4	2,514,705	6.4	59,259	0.1
Yuma	1,705,700	475,600	2,985,000	832,300	27.9	4,492,387	2.5	1,252,612	0.7
Subtotal	2,660,500	498,100	4,665,900	871,700	18.7	7,007,092	3.2	1,311,871	0.6
CALIFORNIA									
Imperial	272,900	96,400	477,600	168,700	35.3	718,750	0.3	253,894	0.1
Riverside	205,000	12,800	358,700	22,400	6.2	539,919	7/	33,712	7/
San Bernardino	1,556,600	824,300	2,724,100	1,442,500	53.0	4,099,771	0.2	2,171,000	0.1
Subtotal	2,034,500	933,500	3,560,400	1,633,600	45.9	5,358,440	0.2	2,458,606	0.1
TOTAL	4,695,000	1,431,600	8,216,300	2,505,300	30.5	12,365,532	0.3	3,770,477	0.1

[1] Source: Recreation Uses of the Lower Colorado River Valley, University of Southern California, 1967

[2] 12-hour visitor days.

[3] Recreation days times an average expenditure of $1.75 as calculated from USC study.

[4] Value of expenditures times a recreation income multiplier of 1.505 as calculated from DES guidelines.

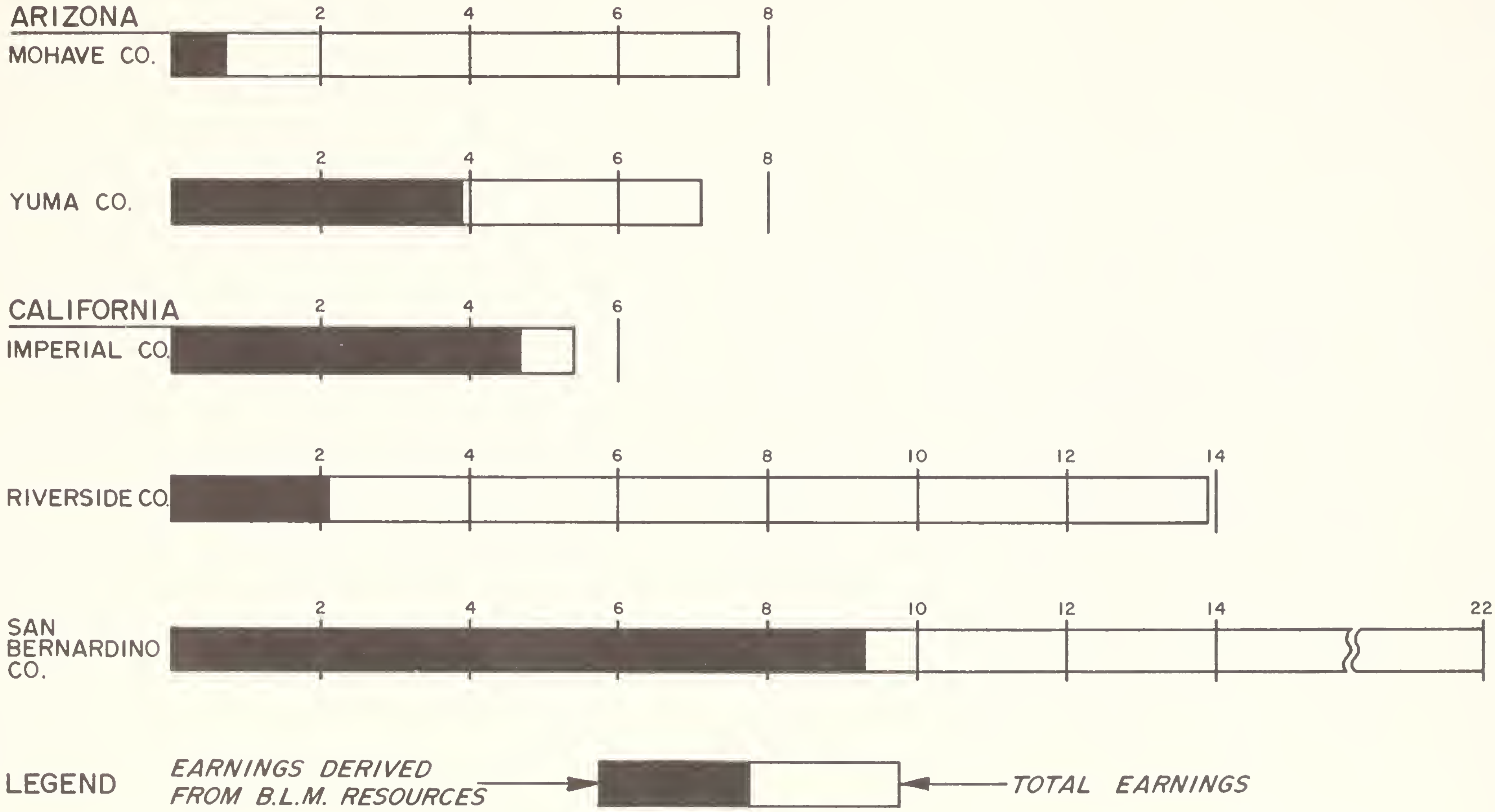
[5] BLM as a percent of all sources; applies equally to recreation days.

[6] Recreation related income as a percent of total personal income for 1967 (OBE data).

[7] Less than one-tenth of one percent.

FIGURE 7

EARNINGS ATTRIBUTABLE TO OUTDOOR RECREATION USE
FIVE COUNTY AREA
($000,000)



MINERALS:

Dependence of the Mining Industry on Public Lands

The mining industry dependence on public lands is based upon the dollar value of mineral production from public domain as compared to the total dollar value of mineral production within the Five County Area. The total production from public lands (Table 24) for 1968 was about $40.6 million compared to a total production value of over $239.4 million. Based upon these figures the industry depends on public lands for 16.4 percent of its total production. This is high compared to the Region which depends on public land for only 3.2 percent of its total mineral production. Dependency ratios of the individual counties within the Five County Area varied from a low of 0.04 percent in Mohave County to a high of 28 percent in San Bernardino County. The only production from public lands in Mohave and Yuma Counties is from sand and gravel, while a variety of minerals are produced from public lands in Imperial, Riverside and San Bernardino Counties. Minerals with significant production from public lands in California include salines, rare earths, sand and gravel, and stone. Although only sand and gravel are produced from public lands in Yuma County, the industry dependency ratio is 10.5 percent. This is attributable to the fact that other mineral production is low in comparison to the other counties.

Dependence on public lands is substantially higher for saleable minerals such as sand and gravel, than for locatable minerals such as copper. For example, 7 percent of the sand and gravel is produced from public lands in Mohave County, 82 percent in Yuma County, 41 percent in Imperial County and 74 percent in Riverside and San Bernardino Counties. No copper is produced from public lands in any of the five counties.

Community Dependence on Mineral Production

The Five County Area economy depends on the mining industry for about 1.4 percent of its total personal income (Table 25). The total income attributable to mining, including the income multiplier effect, is about $57.8 million. Riverside and San Bernardino Counties account for over $48.1 million of the total and have a dependency ratio of 1.3 percent. Earnings attributable to the mining industry in Mohave County exceed $8 million annually or about 13 percent of the county's personal income. In comparison, Yuma and Imperial Counties have very low dependency ratio of 0.4 percent and 0.2 percent, respectively.

Community dependency ratios on public land are relatively insignificant in comparison to those for the total mining industry. About .2 percent of the Five County Area total personal income is attributable to income generated by the mining industry from public lands. The

dependency ratio for Riverside and San Bernardino Counties is only slightly higher than the Five County Area, while ratios for the other three counties are .02 percent to .03 percent. While Mohave County depends on the mining industry to generate about 13 percent of its total personal income, it depends on mineral production from public lands for only 0.03 percent. Inherent in the development of these community dependency ratios is the assumption that the proportion of direct earnings from public lands to total mining earnings is the same as the proportion between the value of mineral production from public lands and the total value of mineral production. (Table 24, last column, and Table 25, column 3.)

The mineral income multiplier used for all minerals except sand and gravel is 1.914. This multiplier is relatively high and reflects the fact that there is a high level of exports of mineral commodities produced in the Five County Area to users outside the area. Little or none of the sand and gravel produced within the Five County Area is exported to outside markets; therefore there is no multiplying effect. For this reason, a multiplier of 1.0, which of course does not expand direct earnings, is used for the value of sand and gravel production: Since all production in Arizona is from sand and gravel, the total earnings attributable to public lands (personal income generated) is the same as direct earnings from public lands (Table 25, columns 4 and 7). The multiplying effect is, however, evident for the California counties.

Most of the mineral production in the California counties occurs in the rural areas; therefore, if the effect of the metropolitan area industrial complex could be removed, the community dependency ratios would be substantially higher than those shown.

Minerals Data Limitations

Mineral production data for public lands are for only those lands presently in public ownership. A substantial part of the mineral production in the Five County Area occurs on lands patented for mineral production purposes. Therefore, both the mining industry and the communities are actually somewhat more dependent on public lands than is indicated by the available information. Extensive exploration work is occurring on public lands and it is reasonable to expect that the future industry and community dependence on public lands will be higher than existing dependency information would indicate. Although this information cannot be put into dollar terms, it should be recognized in the decision making process.

Benchmark Projections - 1980

Arizona projections to 1980 are available for selected minerals only. Since the total dollar projection to 1980 for all minerals cannot be obtained, only those where there is current production from public lands (sand and gravel) are shown in Table 26. More complete data were available for California; therefore the projections consider all minerals.

According to Bureau of Mines data, demand for sand and gravel is expected to increase by almost 680 percent in Mohave County and 178 percent in Yuma County. Production from public lands would have to increase by almost $1.4 million in order to meet their current share of this demand (Table 26).

Bureau of Mines' projections indicate an increase of about 48 percent in copper production in Mohave County and little change in production of minerals, other than sand and gravel, in Yuma County.

The expected increase in demand for mineral products in the three California counties is about 14.2 percent. Production from public lands would have to increase by over $5.7 million in order for public lands to maintain their current share of production.

Public lands are generally more available to prospecting for and removal of mineral materials than other lands. The demand from public lands may therefore be expected to be greater than is indicated by current levels of production or dependence. Based on these observations, it may be expected that public lands will become more important to the mineral industry and to the economy of the community than they are at the present time.

TABLE 24. - MINERAL INDUSTRY DEPENDENCE ON PUBLIC LAND RESOURCE

VALUE OF MINERAL PRODUCTION
($000)

	Sand and Gravel		Stone		Copper, Lead, Zinc, Gold & Silver		Other		Total from Public Lands	1968 Yearbook Total	% of Total from Public Lands
	Total	Public Land	Total	Public Land	Total	Public Land	Total	Public Land			
ARIZONA	14,423	1,106	N/A	0	541,888	0	61,230	0	1,106	617,541	0.2
SO.CALIFORNIA	N/A	16,940	N/A	6,092	N/A	2	N/A	22,119	45,153	808,438	5.6
REGION TOTAL	N/A	18,046	N/A	6,092	N/A	2	N/A	22,119	46,259	1,425,979	3.2
ARIZONA[1]											
Mohave	317	117	0	0	25,260	0	5,907	0	117	31,484	0.4
Yuma	400	327	0	0	2,047	0	676	0	327	3,123	10.5
Subtotal	717	444	0	0	27,307	0	6,583	0	444	34,607	1.3
CALIFORNIA[2]											
Imperial	1,569	640	6	0	N/A	2	N/A	2	642	4,058	15.8
Riverside	4,917	3,200	3,760	900	N/A	0	N/A	60	4,160	74,416	5.6
San Bernardino	10,731	8,300	9,390	5,000	N/A	0	N/A	22,059	35,359	126,343	28.0
Subtotal	17,217	9,140	13,156	5,900	N/A	2	N/A	22,121	40,161	204,817	19.6
TOTAL	17,944	9,584	13,156	5,900	N/A	2	N/A	22,121	40,605	239,424	16.9

[1] Source: 1968 Minerals Yearbook, U.S. Bureau of Mines

[2] Source: California Geology, 1970, pp. 83-84, from U.S. Bureau of Mines data.

N/A = Not available

TABLE 25. - COMMUNITY DEPENDENCE ON MINERAL PRODUCTION

($000)

	Total Personal Income[1]	Total Mining Earnings[1]	%[2]	Earnings from Public Lands	Earnings attributed to[3]			
					All Mining		Public Lands	
					Earnings	%[4]	Earnings	%[4]
ARIZONA								
Mohave	61,713	4,217	0.37	15.6	8,033	13.0	15.6	0.03
Yuma	217,217	538	10.47	56.3	967	0.4	56.3	0.03
Subtotal	278,930	4,755	-	71.9	9,000	3.2	71.9	0.03
CALIFORNIA								
Imperial	283,200	N/A(400)	15.8	63.2	624	0.2	63.4	0.02
Riverside - San Bernardino	3,632,500	26,094	19.7	5,140.5	48,131	1.3	8,471.7	0.23
Subtotal	3,915,700	26,494	--	5,203.7	48,755	1.2	8,535.1	0.22
TOTAL	4,194,630	31,249	16.9	5,275.6	57,755	1.4	8,607.0	0.21

[1] Source: OBE, Regional Economics Information System, 1969.

[2] Mining Industry dependence on BLM-Administered Public Lands, see Table 24.

[3] Sand and gravel earnings were multiplied by mineral income multiplier of 1.000; other mineral earnings were multiplied by a mineral income multiplier of 1.914. These figures were then added to arrive at personal income attributable to mining. Multipliers calculated from DES guidelines.

[4] Community dependence is Mining related earnings as a percent of total personal income.

TABLE 26. - MINERALS - 1980

	1968 VALUE ($000)			1980 PROJECTION ($000 - 1957-59 Constant Dollars)		
	Total	BLM	% BLM	Total	% Increase	BLM[4] Increase Needed
ARIZONA[1]						
Mohave[2]	317	117	36.9	2,472	679.8	795
Yuma	400	327	81.7	1,110	177.5	580
Subtotal	717	444	61.9	3,582	399.6	1,375
CALIFORNIA[3]						
Imperial	4,058	642	15.8	4,634	14.2	90
Riverside	74,416	4,160	5.6	84,983	14.2	599
San Bernardino	126,343	35,359	28.0	144,284	14.2	5,041
Subtotal	204,817	40,161	19.6	233,901	14.2	5,730
TOTAL INCREASE NEEDED						7,105
						17.5%[5]

[1] Arizona projections consider sand and gravel only, since this is the only BLM-produced mineral in the state. Projections based on Bureau of Mines estimates, 1965 - 1980.

[2] Excludes Arizona Strip.

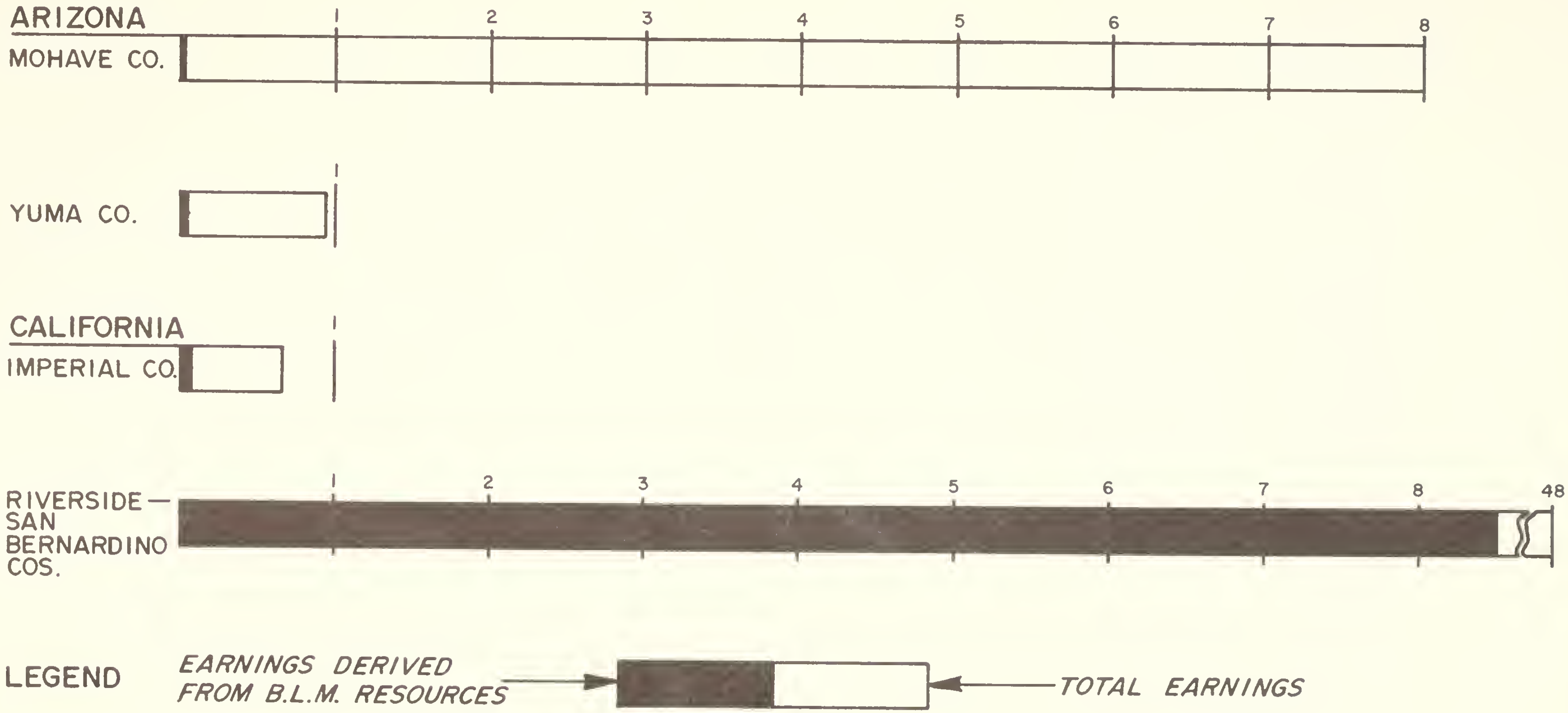
[3] California projections consider all minerals, since BLM supplies a wide range of mineral products. Projections based on California Region Comprehensive Framework study estimate for the Colorado Desert Subregion, 1965 - 1980.

[4] BLM value of production for 1968 X 1980 % increase (col.2 X col. 5).

[5] Total increase needed ÷ BLM total value of production for 1968 of 40,605 (Arizona + Calif. Subtotals)

FIGURE 8

EARNINGS ATTRIBUTABLE TO THE MINING INDUSTRY
FIVE COUNTY AREA
($000,000)



VEGETATIVE PRODUCTS:

The permitted production of vegetative products from public lands within the Five County Area is minimal; therefore no attempt is made to quantify economic outputs and dependency ratios. Some illegal harvesting of products is known to occur but there are no estimates of the amounts taken.

Products harvested from public lands include desert plants (dead and alive) for ornamental purposes, firewood, juniper posts, Christmas trees, and yucca for use as a fertilizer carrier. Most of the use occurs on higher elevation lands not related to the Lower Colorado River Valley. Only harvesting of ornamental plant material occurs within the Lower Colorado River Cooperative Planning Area.

WATER:

The water resource cannot be analyzed as an industry or economic sector. Earnings from water use or other economic measures as used for other resources are not available. However, water affects the economy of both the Region and the Five County Area more significantly than any other resource. The various industries and communities of the Five County Area depend upon water, much of which comes from outside the area, for their existence.

The two major sources of water are the Colorado River and local underground sources. Both of these sources are limited and are fully obligated or over-obligated at the present time. All river water has been allocated to the states and to users, while the water table of many underground aquifers is declining, indicating that this source is being used more rapidly than it is being recharged.

Although precipitation is very low over most of the Five County Area, some surface water from the more intense storms is produced. This production adds to the total available water supply; however, net benefits from this additional supply may be negative for several reasons. Usually surface runoff, which adds to the water supply of the reservoirs, is generated from flash floods. These floods often cause serious property damage and they carry a heavy silt load that reduces water quality. The public lands of the Five County Area are therefore not considered to be of major significance for production of surface water.

The limited supply of surface water and the declining groundwater tables will have a serious effect upon future land use, growth of the area, and the type of growth. Without augmentation of the water supply, little additional land is likely to be converted to agriculture. Community growth cannot continue indefinitely without converting water from the less intensive uses, such as irrigation, to domestic use. The larger industries with high water demands are not likely to locate in the area. The demand for transfer of public lands to private ownership will, therefore, be limited unless additional water can be made available for growth and expansion of the area.

LAND USE:

General economic and population growth of the Five County Area, Region, and nation, have a definite impact on land use and patterns of use within the Five County Area. Population growth and the demand for more conveniences require more energy, communication facilities, and transportation facilities. In terms of land use, these demands are for electric transmission facilities, electric generating plants, gas pipelines, communication lines (underground and overhead), communication microwave sites, highways, railroads, airports, etc.

Numerous corridors and networks of these facilities exist throughout the Five County Area. Continued economic growth of the entire southwest will exert an increasing pressure for additional facilities along existing corridors at already established sites and for new corridors and sites. Pressures on public land for these uses may be expected to equal or exceed the pressure on other land within the area.

Increased leisure, coupled with changing leisure patterns (i.e., shorter work weeks), increase mobility; and increasing disposable incomes generate more demand for recreation, including space for private recreation homes, recreation businesses, etc. Private lands have been meeting most of the demand for this type of use; however, as the demand increases, pressures on public lands to provide for this use may be expected. This single use demand may, and probably will, be in direct conflict with public demands for other uses and multiple use management objectives.

In addition to these major land use demands on public lands, an increase in the demand for various special uses may be expected. These uses may include refuse disposal sites, advertising displays, and many others from both the private and local public sectors. Usually such uses are temporary but the occupancy period may vary from a few weeks to several years, and the use could require substantial physical alteration of the site. Although these uses are primarily single use oriented, they represent a real demand for use of the public lands.

These land use demands are a necessary part of any growing economy and must be recognized and considered in the planning process.

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